Systematic Mapping of Big Data for Development Stakeholders with a Focus on the 'Global South'

FINAL REPORT

The Centre for Internet and Society, India | LIRNE*asia*

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Introduction

In 2016, the Center for Internet and Society and LIRNE*asia* undertook a mapping exercise to identify actors involved in the big data for development (i.e. big data for public purpose) discourse globally, with a particular focus on the Global South. The activities related to big data, particularly big data for development in and relevant to the Global South, and the activities related to big data for development in the Global North were captured in the mapping.

The final mapping consists of 215 actors worldwide that we have found most relevant or potentially relevant to big data and development out of a larger database of approximately 1100 entries. These entries have been coded based on:

Region

Middle East and North Africa, Sub Saharan Africa, Europe/North America/ Central Asia, East Asia, South Asia, South East Asia, Latin America, Oceania

Type of organization

Types of organizations that were coded include government, industry, university/academic, center/foundation, and civil society.

Type of actor

Types of actors that were coded include

1. **Policy Actors**: those using big data insights to facilitate and implement policy decisions. It also includes those actors who are able to influence the policy environment with regards to the adoption, use and ramifications of big data, particularly development-focused big data.
2. **Researchers**: those actors involved in research and/or analysis of big data and/or those discussing the implications (privacy, competition, marginalization, etc.) of big data research. This includes researchers in research firms, think tanks, incubators development agencies, and universities.
3. **Intermediaries**: those focused on reporting and communicating uses and implications of big data, ideally development-focused big data and those playing the role of connectors. This includes media, reporters, development agencies, thought leaders, advocacy groups etc.
4. **Data Providers**: those actors generating big data that have been used for analysis, ideally for development purposes.
5. **Funders**: funding agencies that support big data projects, with a particular focus on development-focused big data projects.
6. **Other**: those actors that may not fit into any of the above categories.

Domain

Over the course of research, as the coding for various types of actors/ organisations evolved, we introduced several domains for a more nuanced classification, depending on the area or field of work with respect to big data or big data for development. We also captured domains that clearly pertain to big data and development and domains we see as emerging in relation to big data and development (these have been indicated below). Though most of the domains developed by us feed into the SDGs, the latter was included as a separate domain to include research or work studying use of big data only in light of the 17 goals. This category encompasses projects/initiatives exclusively looking at the use and role of big data in monitoring the progress as well as achieving the 17 sustainable development goals (SDGs) namely.[1] The coding has been done according to the following domains:

1. **Agriculture and Environment**: This includes research on big data for agriculture, climate and the environment, and climate/environment/ agriculture focused initiatives (including Government) using data, and big data or products around big data for agricultural use and development.
2. **Science & Technology:** This includes initiatives and projects as well as products focussed on data analytics, data mining, Web Archives, ccTLD data, Innovation, Spatial Data Mining, Behavioral Insights for development like food security, health, policy. **As a note**: though the science and technology domain does not explicitly fall under bd4d, organisations based in the Global South and working science and technology have also been captured due to their activities being potentially relevant.
3. **Official Statistics**: This includes National Statistical Offices which have projects on big data, but does not capture information regarding all the National Statistical Offices across the world.[2] This category also includes open data portals that have a link to national statistics, research undertaken on national statistics and big data, and big data projects that use official statistics data.[3] **As a note**: we see official statistics as an emerging area with relevance to bd4d.

4. **Education**: This includes organisations doing research around big data and education, and universities or educational institutions doing research on big data or big data for development.
5. **Financial and Social Inclusion**: This includes research or initiatives using data analytics or big data-driven innovation for development addressing issues around welfare, marginalisation, food security, poverty alleviation, disaster relief, employment, data monetization etc.
6. **Infrastructure**: This includes open data portals hosting relevant data and research done on use of data/big data for infrastructural development, as well as initiatives using data and data analytics to gain insights regarding development of related domains.
7. **Disaster and humanitarian response**: This Includes initiatives in adopting big data technology for disaster response and management, as well as research undertaken around use of data/big-data technology in assisting humanitarian response action.
8. **SDGs**: This includes research and initiatives around use and role of big data in context of SDGs and MDGs explicitly.
9. **Open data**: This includes open data portals, big data research that leverages open data, and open data initiatives. **As a note**: we see open data as an emerging area in bd4d.
10. **Governance**: This includes Research and initiatives which impact policy making and governance, including policy, employment, law enforcement, e-governance, technology and governance, technology and development, governance and development, emergency management, mobility, dynamic census, region and urban analysis, simplification of big data for policy, public sector service delivery, crime management, poverty, economy, technology and cyber security.
11. **Rights**: This includes initiatives using data or big data to research rights, and research and conferences revolving around issues affecting rights of individuals or society at large like privacy, surveillance, freedom of expression, equality, ethics, social justice etc.
12. **Health**: This includes research on use of big data for health, along with initiatives using data or big data for health development and decision-making regarding the same. This also includes work around predicting and mitigating spread of diseases and use of health information systems for increased efficiency.
13. **Gender**: This includes research and initiatives around big data and its use to address gender-related concerns and issues.

As part of the coding we have also captured the name, contact information, biography, expertise, focus on bd4d, and source of big data if relevant - for each entry. The comprehensive protocol followed for the compilation of this data can be found in Annex 1.

The results of the mapping exercise provide a bird's eye view of select actors and initiatives working in big data and development globally, with a focus on the Global South. Though this exercise is not fully comprehensive as new information emerges on a daily basis and there is the possibility that we have not captured all the relevant actors, we hope to have captured a broad picture of what is happening with big data for development at a global level.

Challenges that we faced in the research included overcoming and accurately accounting for language differences and capturing multiple domains etc. that an organization might fall under. For example, we found that organizations that worked in both agriculture and big data and could be categorized as both policy actors and researchers. Similarly, organizations often work across a number of areas such as health, agriculture, and infrastructure.

This report analyses the 215 entries and draws trends and learnings from the same towards the development of a network.

Mapping Trends and Learnings

This section seeks to call out key learnings and trends from our mapping exercise. The learnings have been organized according to the following broad categories: regions, organizations, domains, actors, and gender. Though we had additional coding categories (for example country and name) we found the above the most useful for deriving high level insights regarding the development of a network. For each category, we provide an overview from the mapping and then analyse trends and learnings derived from pivot tables (actor vs. region etc). Though we systematically ran pivot tables, in this report we have tried to highlight ones that can help to answer key questions about distribution of actors, organizations, domains and gender. **As a note**: the count in some of the categories such as domain, organization, and actor is higher than 215 as some entries fall into under multiple categories i.e, an organization can work on health, gender, and infrastructure issues.

Actors

72
POLICY ACTOR

123
RESEARCHER

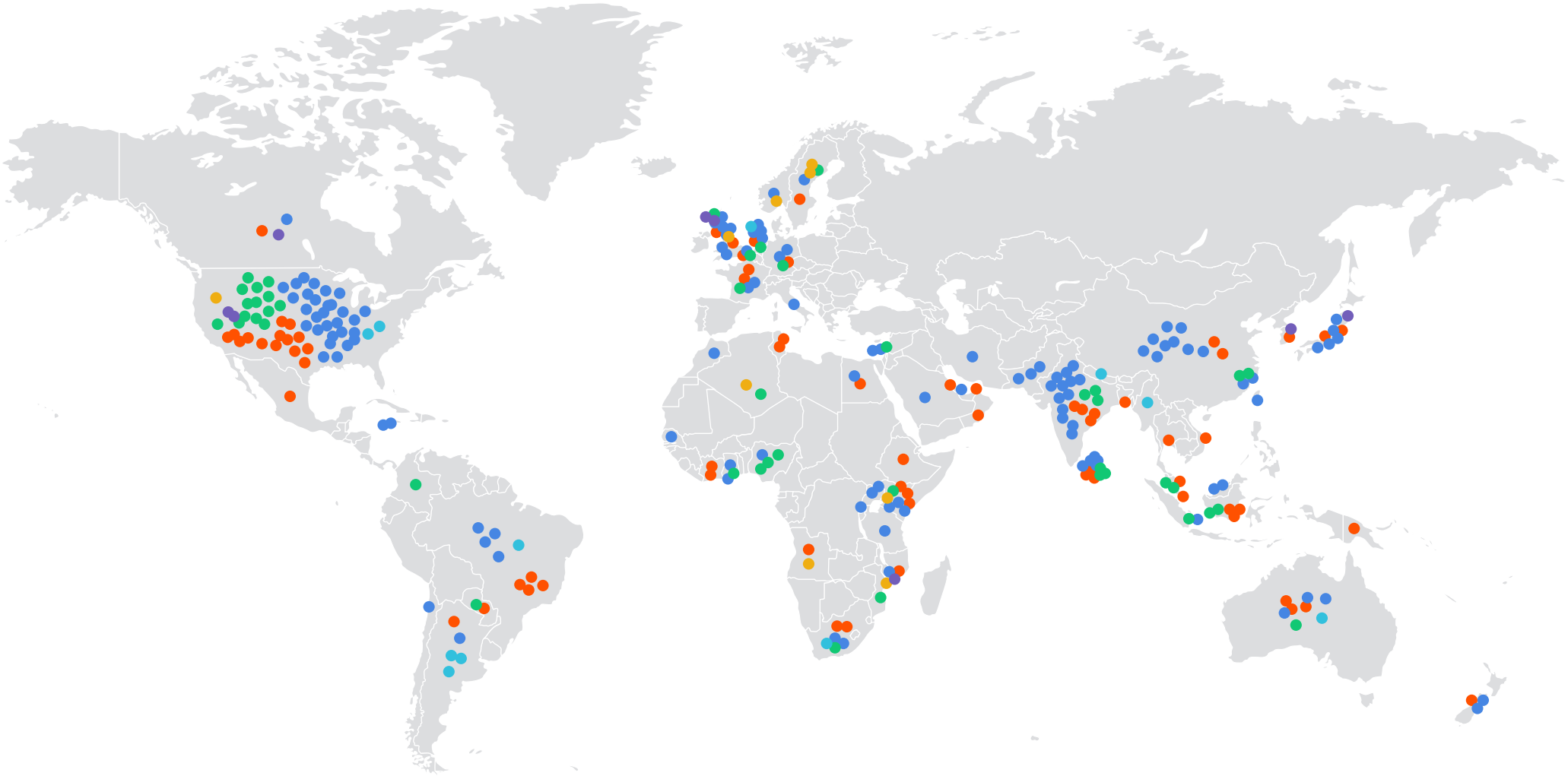
45
INTERMEDIARY

9
DATA PROVIDER

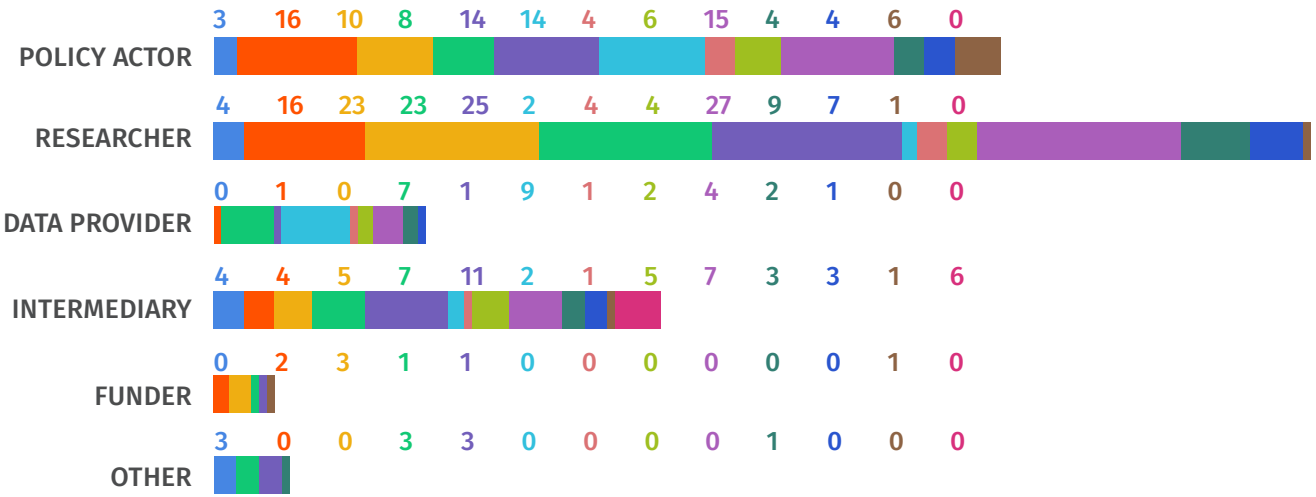
8
FUNDER

11
OTHERS

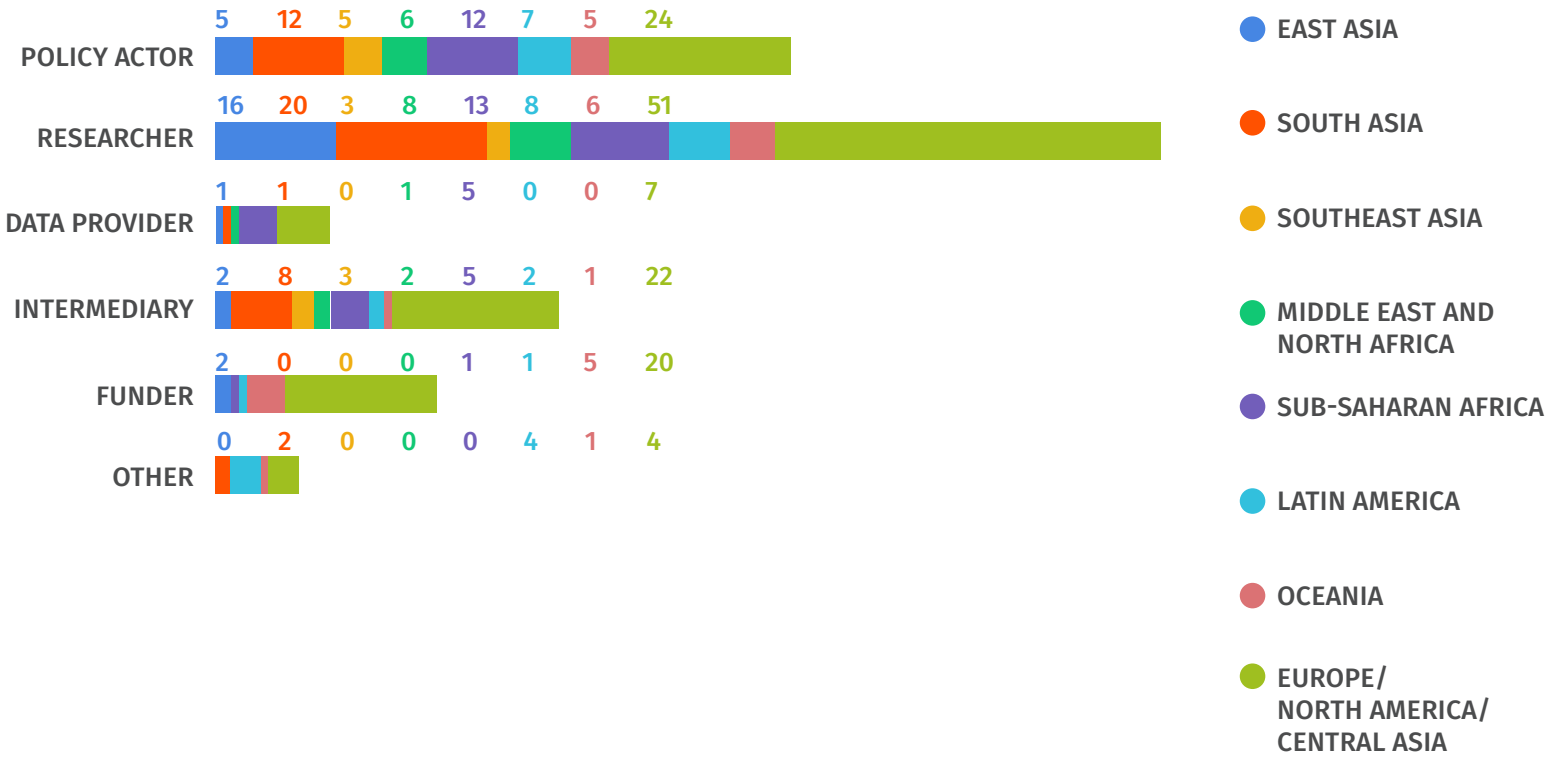
Regional Distribution of Type of Actors



Type of Actors Across Domains



Type of Actors Across Regions



From the mapping we found that:

- Researchers were the most prevalent type of actor with intermediaries being the next most prevalent. When actors were mapped to region, we found that Europe/North America/Central Asia and Oceania hosted the largest number of researchers and intermediaries. In Global South countries, South Asia and East Asia also have a preponderance of researchers, while Sub-Saharan Africa and Latin America have more policy actors.
- Data providers are heavily represented in the domains of official statistics followed by health and infrastructure.
- Policy actors seem to be focusing on infrastructure followed by governance, official statistics, and science and technology. Whereas researchers appear to be equally interested in infrastructure, science and technology, health and rights.
- Intermediaries seem to be interested in the domains of science and technology, health, and infrastructure. This could be a result of conferences being captured as intermediaries and we a found a number of big data science and technology conferences taking place.

For a network, this could indicate that intermediaries are an emerging and important actor type across regions, and that there is a strong need to identify, support, and build research capacity amongst actors in the global south. The prevalence of open data portals and national statistics offices as data providers highlights the importance of open data in researching big data for development in the global south.

Organizations

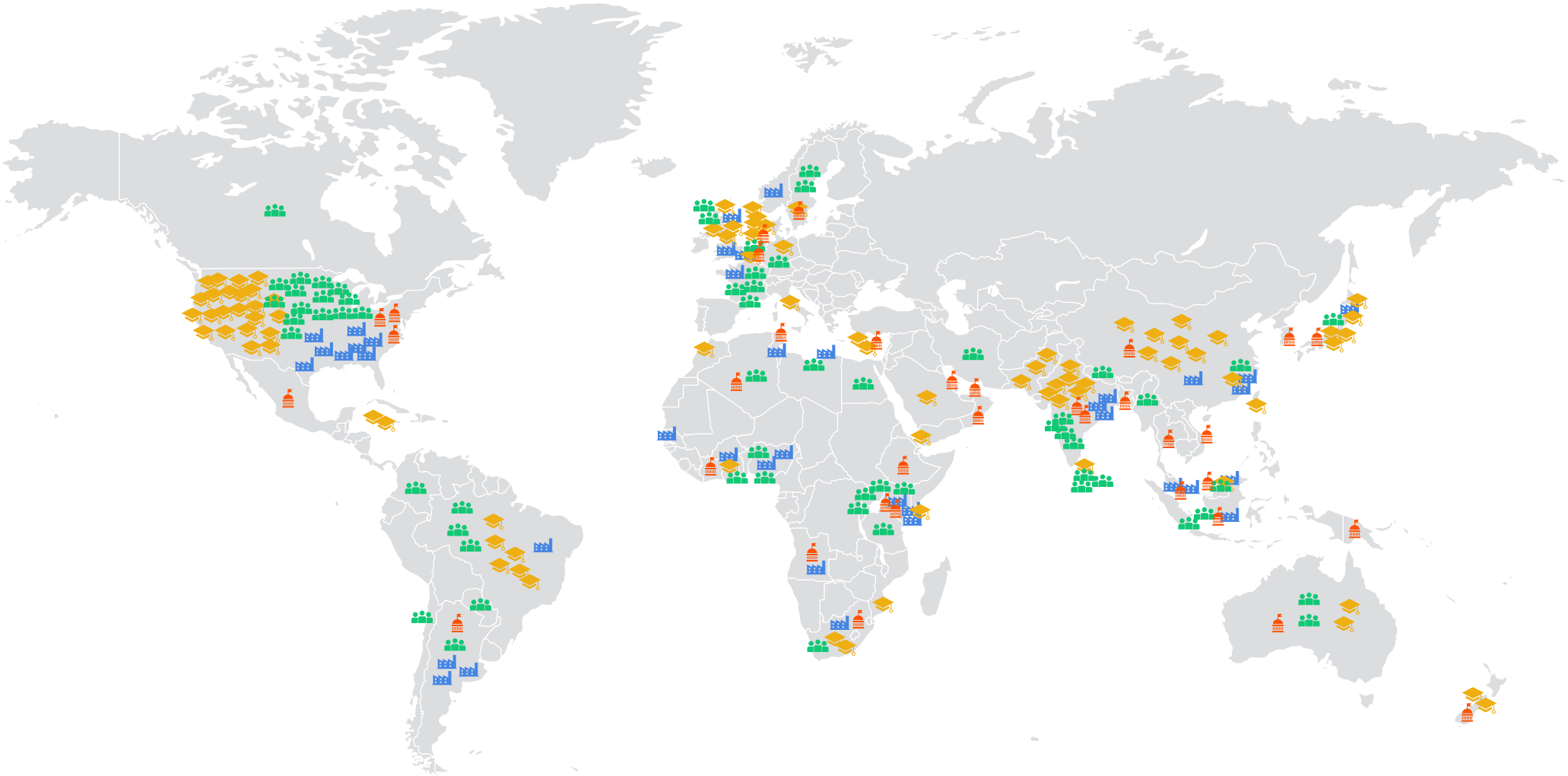
34
GOVERNMENT

39
INDUSTRY

61
CIVIL SOCIETY

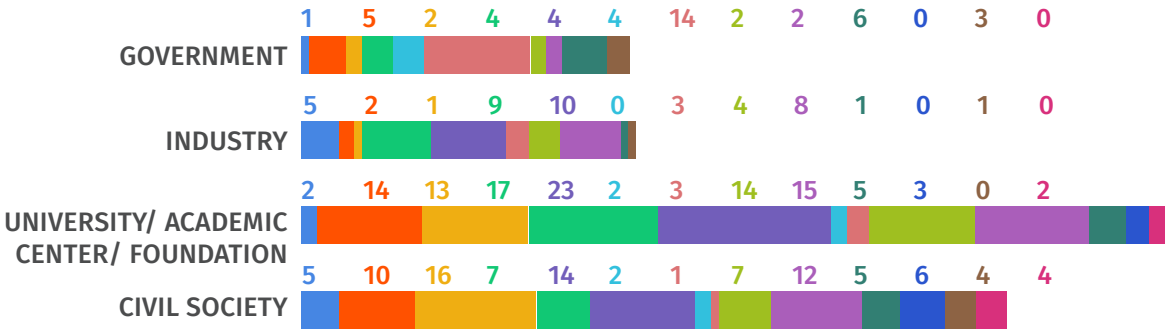
84
UNIVERSITY/ACADEMIC CENTER/FOUNDATION

Regional Distribution of Type of Organizations



This illustration uses the following icons from **The Noun Project**
Factory created by Franc
Government created by Rflor

Type of Organizations Across Domains



- AGRICULTURE AND ENVIRONMENT
- GOVERNANCE
- RIGHTS
- HEALTH
- SCIENCE & TECHNOLOGY
- OFFICIAL STATISTICS
- EDUCATION
- FINANCIAL AND SOCIAL INCLUSION
- INFRASTRUCTURE
- DISASTER AND HUMANITARIAN RESPONSE
- SDGs
- OPEN DATA
- GENDER

Type of Organizations Across Type of Actors

From the mapping and pivot tables we found that:

- Policy actors are heavily skewed towards government and civil society as can be expected. Civil society and university are heavily represented in the researcher category as opposed to government and industry. Interestingly, data providers for Bd4D are predominantly represented in the government. This could in part be a result of open data portals and official statistics offices being represented. We also know that industry is an important data provider, but from the websites of industry this is not clear and thus in the mapping many were not captured as data providers. Funders were predominantly represented in civil society and university/academia/foundation. This could in part reflect the fact that we captured international organizations such as the World Bank as a civil society organization.
- Governments appear to be looking at education, disasters/humanitarian response, and governance. For industry, the highest priorities seem to be science & technology, health, and infrastructure. For University/Academic Center/Foundation actors - science & technology seems to have the highest interest but health, governance, rights, financial and social inclusion, and infrastructure all seem to also attract significant attention. Civil society actors seem the most interested in rights, science and technology, infrastructure and governance.

For a network, this demonstrates that there is a significant amount of work being done in the research and policy arena.

Domains

13
AGRICULTURE AND ENVIRONMENT

31
GOVERNANCE

32
RIGHTS

36
HEALTH

6
GENDER

49
SCIENCE & TECHNOLOGY

17
OFFICIAL STATISTICS

8
EDUCATION

17
FINANCIAL AND SOCIAL INCLUSION

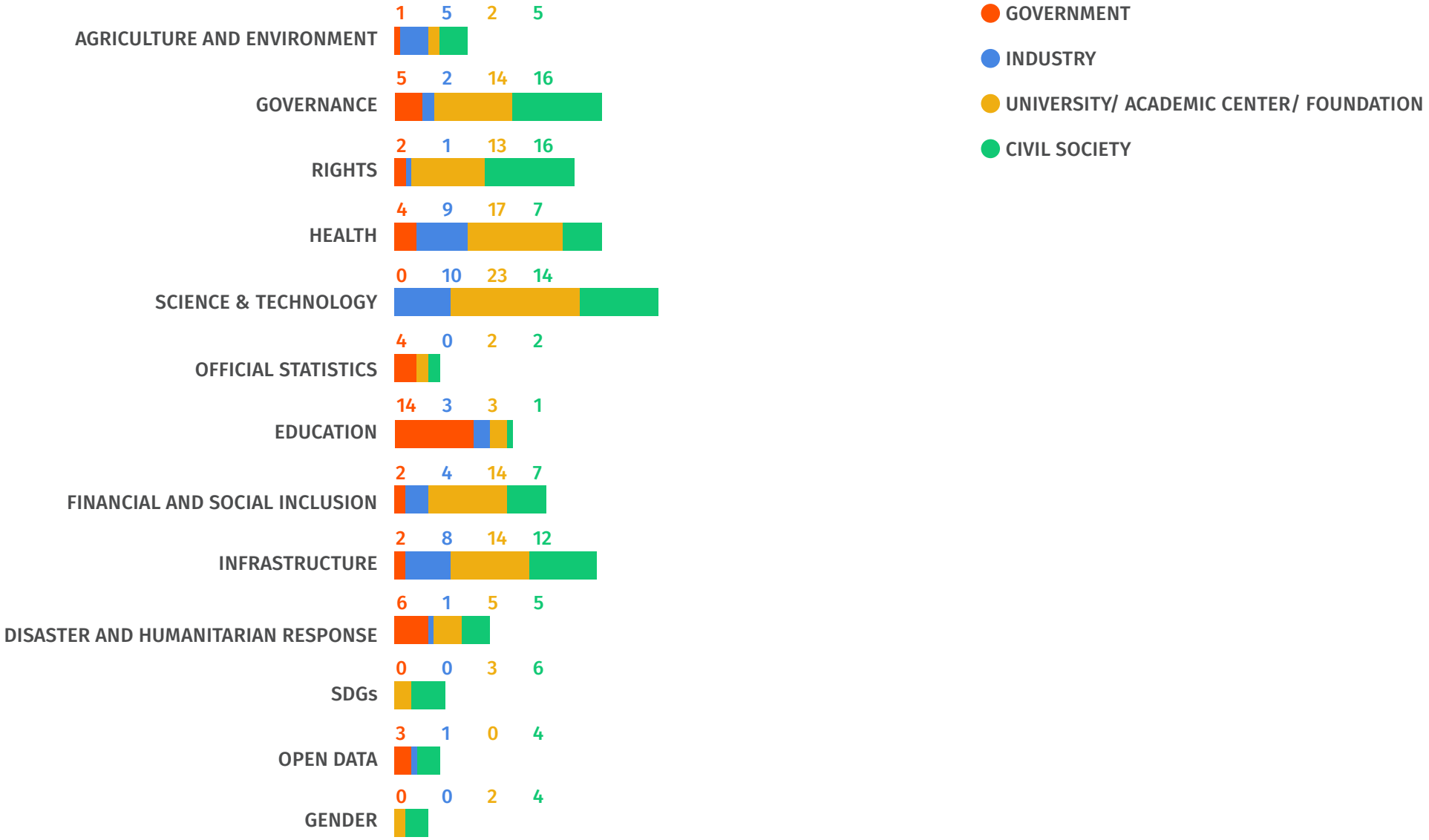
42
INFRASTRUCTURE

13
DISASTER AND HUMANITARIAN RESPONSE

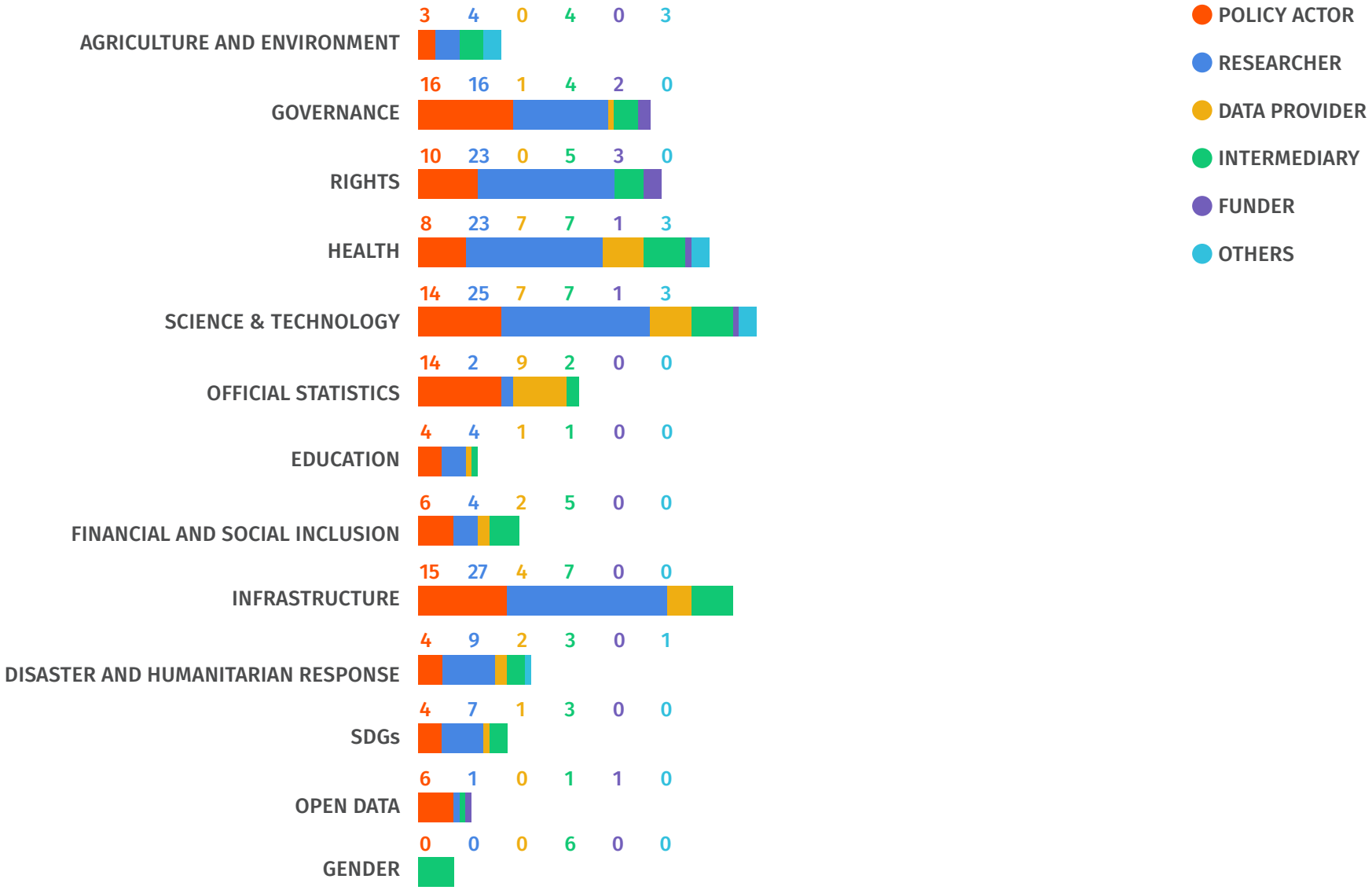
9
SDGS

8
OPEN DATA

Domain Wise Distribution Across Type of Organizations



Domain Wise Distribution of Type of Actors



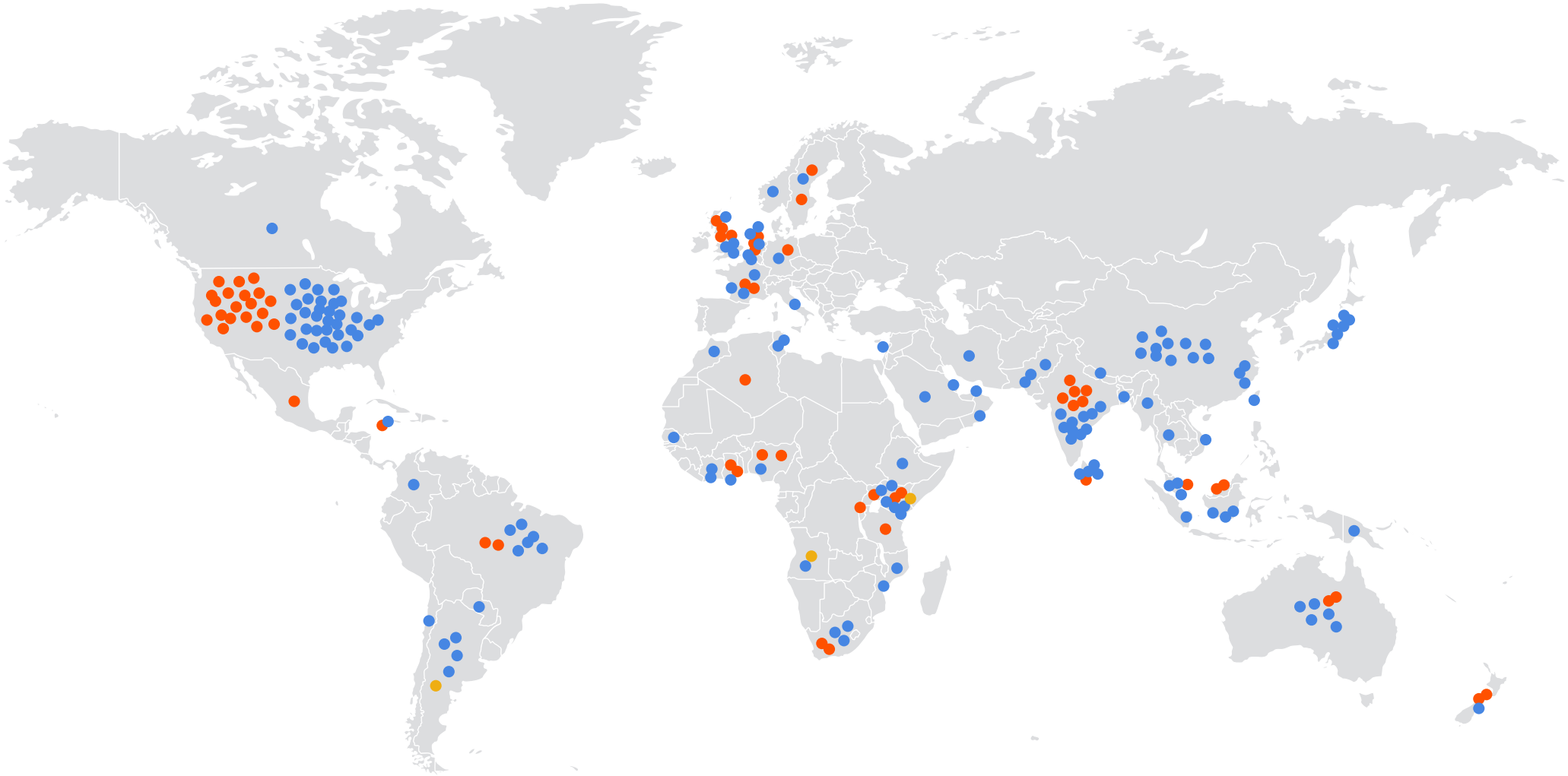
From the mapping and pivot tables we found that :

- Governments appear to be looking at education, disasters/humanitarian, and governance. For industry, the highest priorities seem to be science & technology, health, and infrastructure. In University/Academic - science & technology seems to have the highest interest but health, governance, rights, financial and social inclusion, and infrastructure all seem to also attract significant attention. Civil society seems the most interested in rights, science and tech, infrastructure and governance.
- Research into big data and open data and big data and education were the domains with the least amount of work being done as a whole. Despite this, we have identified open data as having important intersections with big data.
- The domains which seem to have attracted maximum interest according to our mapping are Governance, Rights, Health, Science & Technology.

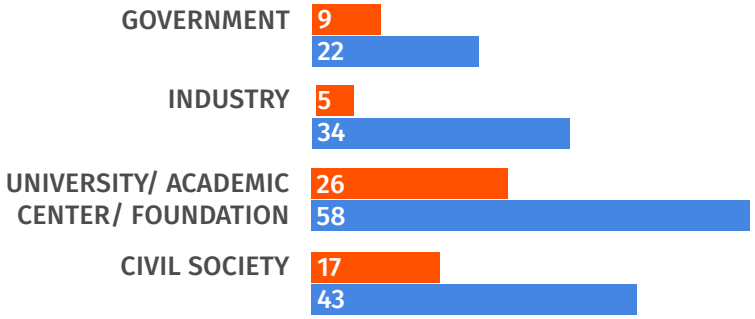
For a network, this can indicate that infrastructure, health, and governance could be initial domain focus areas of research. Rights perspective research could be further incorporated into these domains. The heavy focus on science and technology could be a result of industry actors but is important to take note of as technical capacity would be necessary to incorporate in the network.

Gender

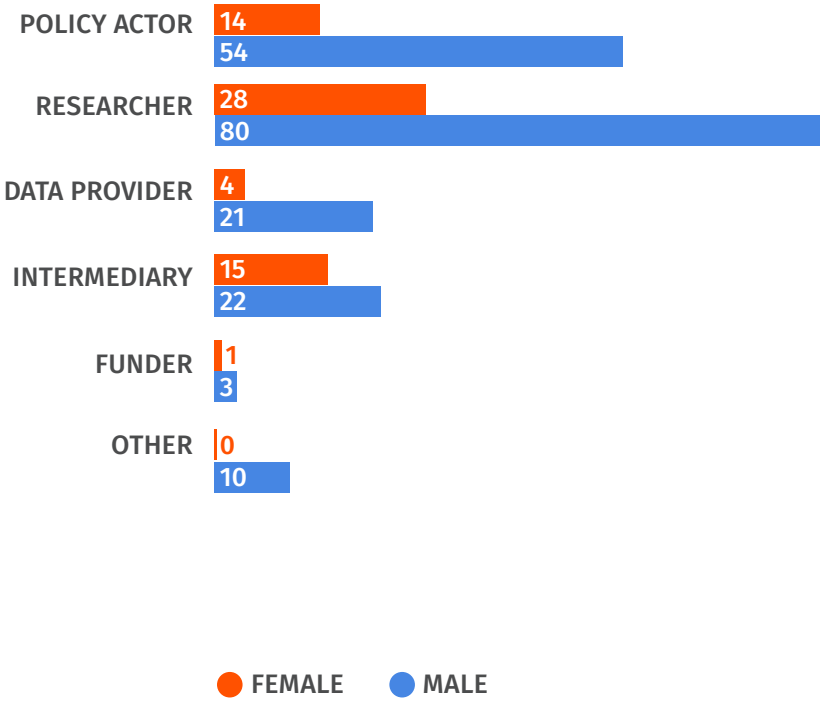
Regional Distribution of Actors Based on Gender



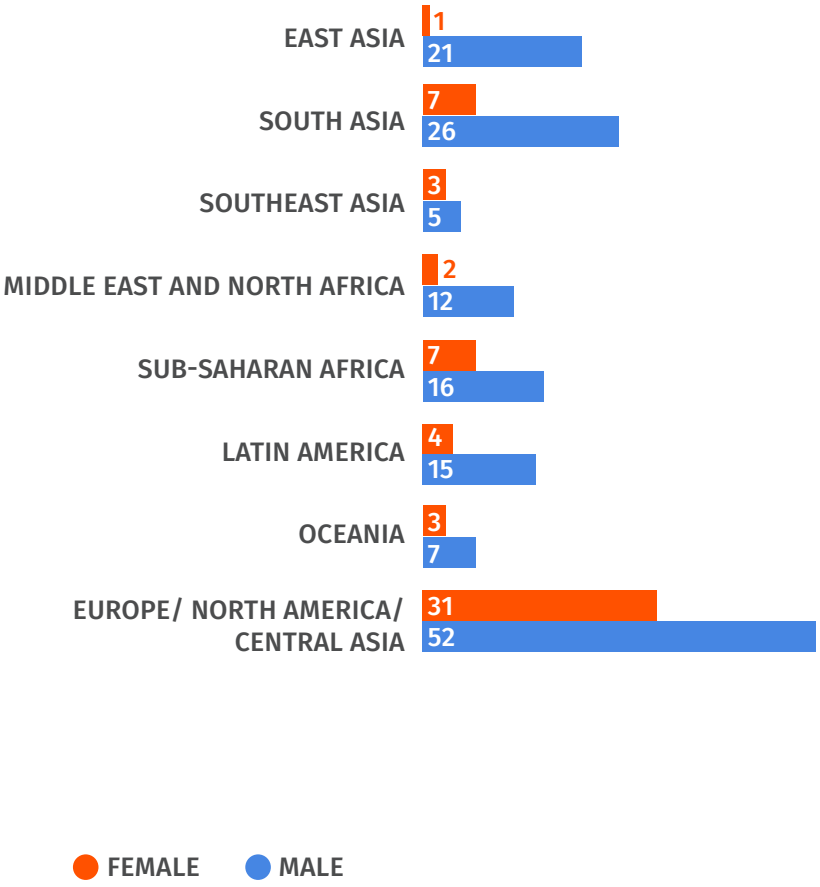
Gender Wise Distribution Across Type of Organizations



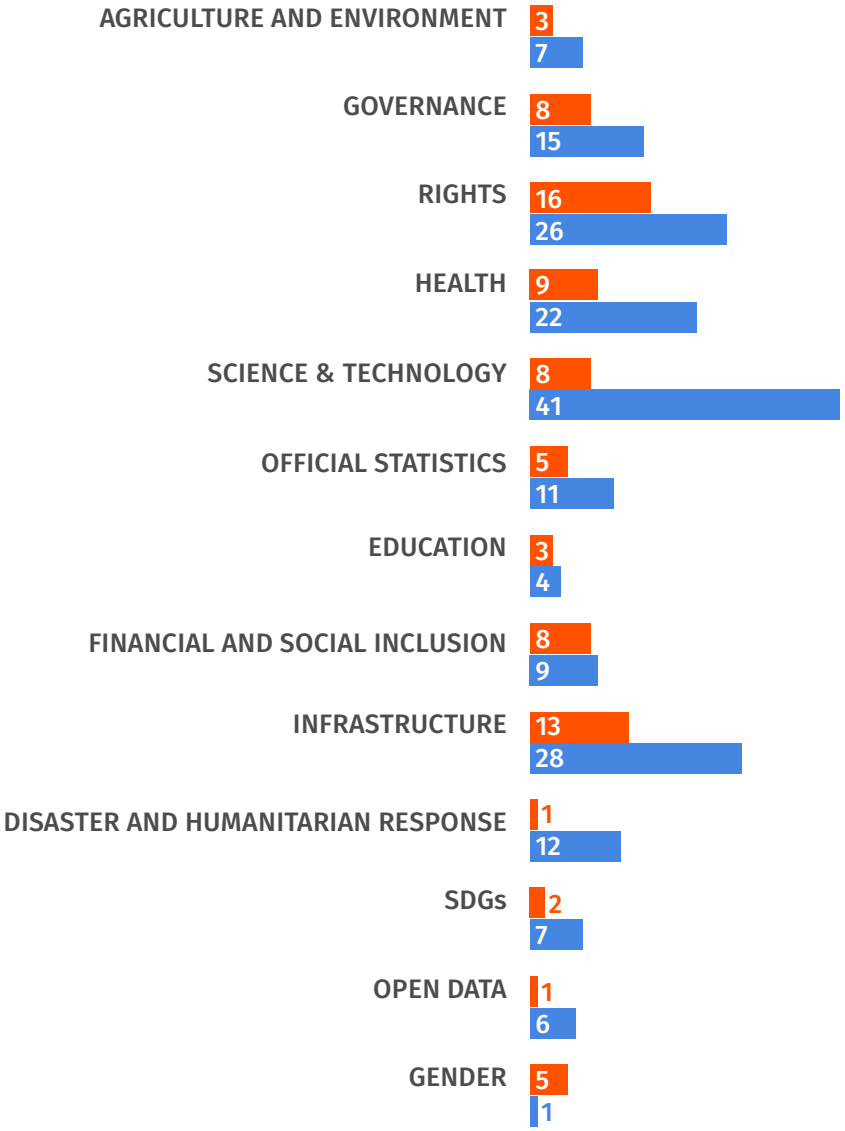
Gender Wise Distribution Across Type of Actors



Gender Wise Distribution Across Regions



Gender Wise Distribution Across Domains



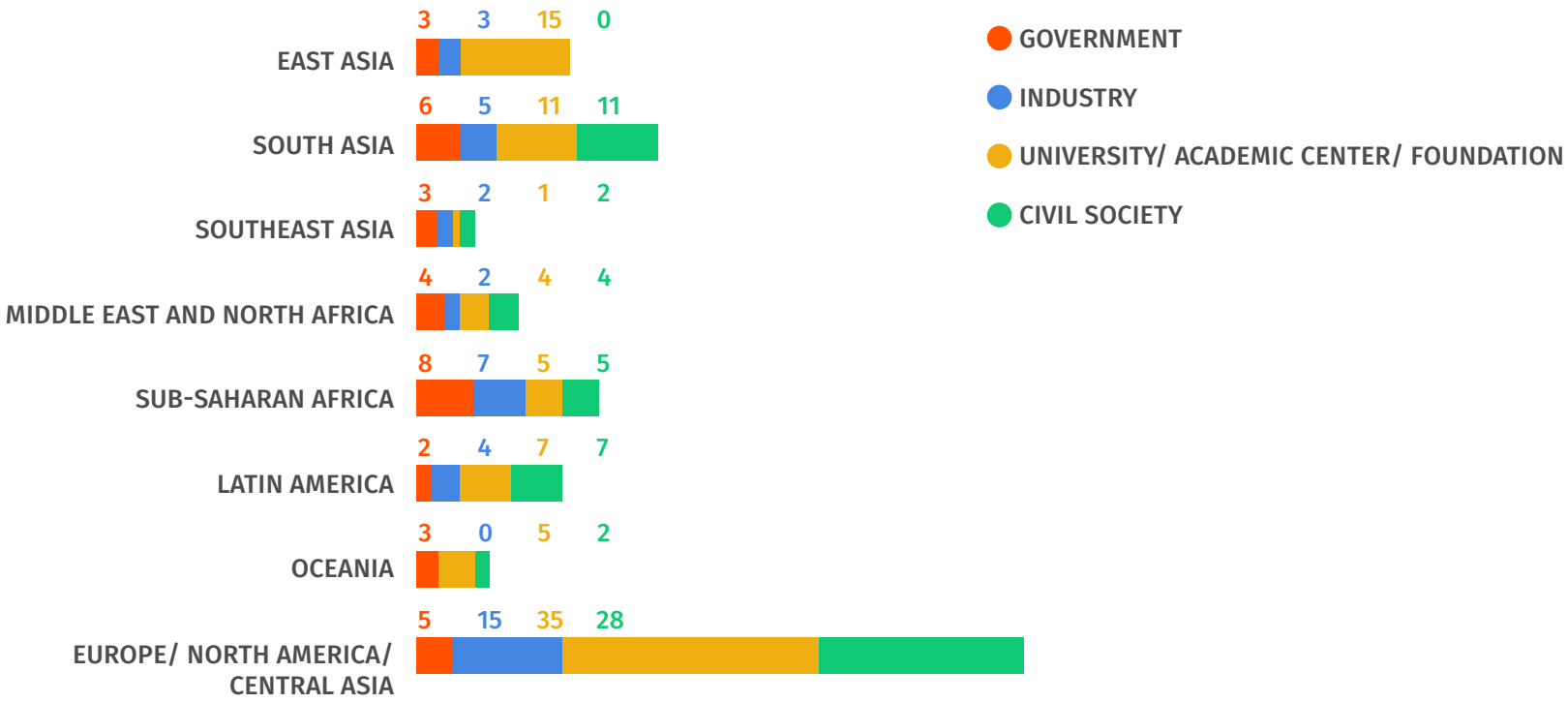
From the mapping we found that:

- Only six entries in the mapping fell into the domain of gender.
- There is a significantly lower number of women working in the field than men. Europe/North America/Central Asia has the largest number of women focusing on big data for development with very low percentages in all other regions.
- Interestingly, Sub-Saharan Africa seems to have the next best gender ratio after Europe/North America/Central Asia.
- Researchers have the highest representation from females while Surprisingly, civil society, government, and industry is heavily skewed towards male. University/Academic organizations has the strongest female representation.
- The domains in which we see greater proportion of women are Financial Inclusion, Health, and Rights.

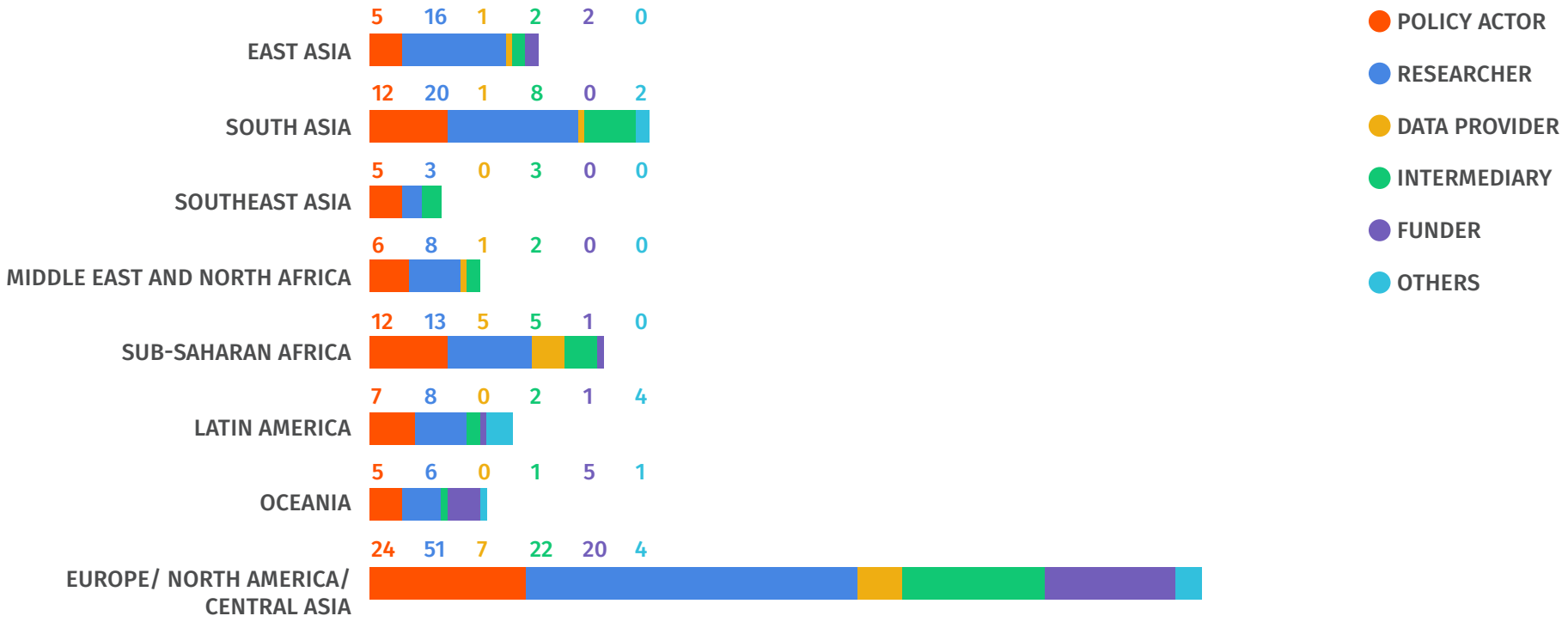
For a network, such domains could be focus areas for additional gender engagement.

Regions

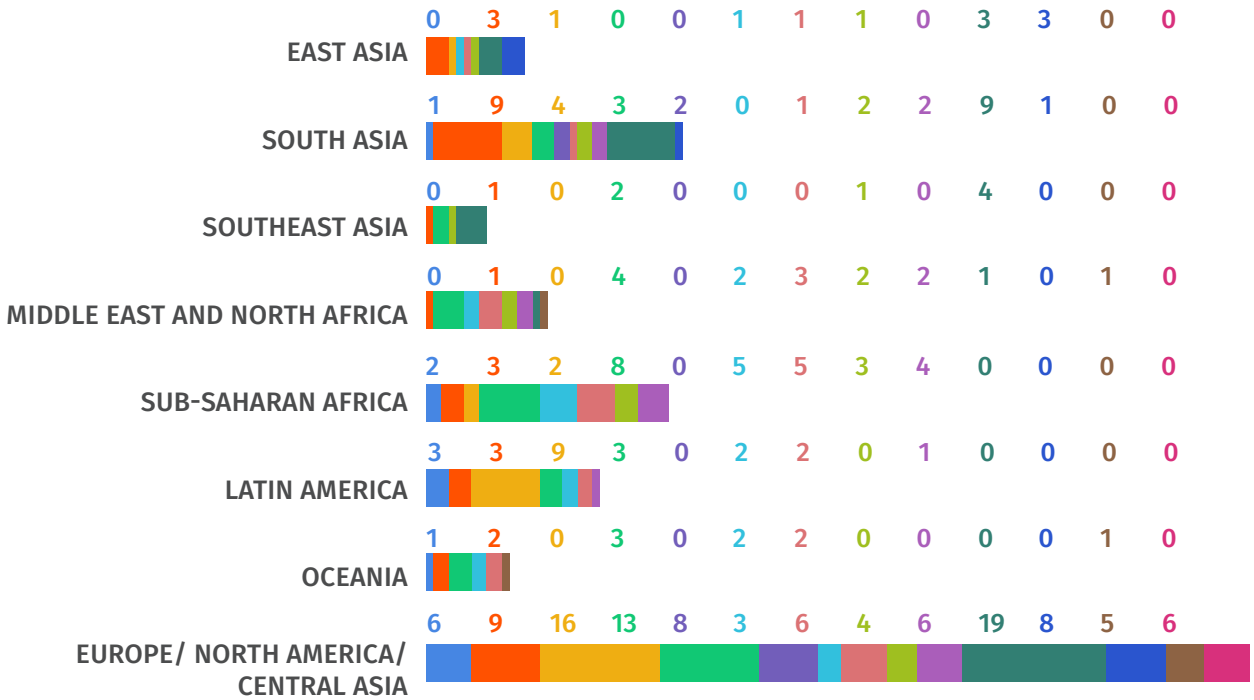
Regional Distribution of Type of Organizations



Regional Distribution of Type of Actors



Regional Distribution of Domains



- AGRICULTURE AND ENVIRONMENT
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- RIGHTS
- HEALTH
- SCIENCE & TECHNOLOGY
- OFFICIAL STATISTICS
- EDUCATION
- FINANCIAL AND SOCIAL INCLUSION
- INFRASTRUCTURE
- DISASTER AND HUMANITARIAN RESPONSE
- SDGs
- OPEN DATA
- GENDER

From the mapping we found that:

- Surprisingly, In Europe/North America/Central Asia, agriculture seems to be getting the highest interest followed by Latin America and Sub-Saharan Africa. Governance is heavily represented in South Asia and Europe/ North America/Central Asia. Rights research seems tems to be heavily represented in Europe/North America/Central Asia and Latin America. Sub saharan Africa and the Middle East and North Africa seem interested in health, financial services, and infrastructure.
- Universities/Academics feature consistently as prominent Big Data for development actors in all geographies (less prominent in South East Asia and Sub-Saharan Africa), while Civil Society features prominently in all geographies except East Asia.
- Interestingly, Europe/North America/Central Asia is the main region doing big data work related to the SDG domain with a small percentage being done by South Asia. Regions with the least amount of domains represented appear to be South East Asia, Middle East & North Africa, and Oceania.

For the research network, we may explore the possibility of network members from each region focusing on a specific domain of research. For example, Sub-Saharan Africa could concentrate on big data and health.

Ways Forward

This mapping was an initial exercise undertaken to create a birds eye view of relevant actors and initiatives working in big data and development towards the creation of a network. Ways in which this research could be taken forward include:

1. Further identification of relevant actors.
2. Intensive research and documentation of domains of focus, research capacities, and forms of applied practice and interventions within each domain.
3. Further mapping of points 1 and 2 on region and to specific countries.
4. Documentation of existing collaborations between actors in the mapping.
5. Conversations with key identified actors towards understanding overlaps (organizational or other) with the objectives of the network as well as local contexts to understand how the same can be leveraged.
6. Documentation of existing legal frameworks (general and sectoral) within which big data for development projects are undertaken within each key country/region, and the engagement of the actors concerned with the same.

ENDNOTES

1. No poverty, Zero Hunger, Good health and well-being, Quality education, Gender equality, Clean water and sanitation, Affordable and clean energy, Decent work and economic growth, Industry, innovation and infrastructure, Reduced inequalities, Sustainable cities and communities, Responsible consumption and production, Climate action, Life below water, Life on land, Peace, justice and strong institutions, Partnerships for the goals
2. List of Offices available here: https://www.wto.org/english/res_e/statis_e/natl_e.pdf
3. For example: http://bpp.mit.edu/datasets/

A Protocol for the Systematic Mapping of Global Stakeholders and Initiatives Involved in Big Data for Development with a Focus on the Global South

BACKGROUND

Objective of the current review

LIRNEasia and Center for Internet and Society seek to identify actors who are involved in and/or could be involved in the big data for development (i.e. big data for public purpose) discourse globally, with a particular focus on the Global South capturing the activities related to big data, particularly big data for development in and relevant to the Global South, and the activities related to big data for development in the Global North.

Search question

Who are the data providers, researchers, policy actors, funders, and intermediaries in government, industry, university, and civil society involved in researching, analyzing, synthesizing, reporting, influencing, using (for decision-making) and supporting big data in the Global South and big data for development in the Global North, with development referring to activities and outputs of a public interest/purpose nature and the actors identified in terms of their gender, country/region of focus and area of expertise?

METHOD

Design of this systematic mapping

This systematic mapping method is based on the systematic reviews methodology which has emerged in response to the explosive growth of research studies in almost every field. This approach was initially applied in the clinical medical sciences by the Cochrane Library, but now applied across all areas of research by the Campbell Collaborative and the Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Centre), as a genre of studies now known as Systematic Reviews. A systematic review is a structured, comprehensive, transparent and replicable process in which all available scientific evidence on a topic of interest is rigorously identified, screened, mapped, appraised, and synthesized to make decision-making more evidence-based.

A protocol for systematic scoping or mapping of stakeholders of interest here too could consist of “Search, Screen, Map, Appraise and Synthesize” steps. The synthesis can be as simple as an ordered list or a narrative synthesis, depending on the requirement.

Since the expected output is a list of stakeholders and the sources are undefined except for a list of key individuals and organizations, and key public policy domains where big data is being used were secured by the client (APPENDIX 1.1), a preliminary search using google.com or scholar.google com will precede the “Search, Screen, Map, Appraise and Synthesize” steps to identify sources.

Advisory team involvement

The list of key personnel given by the Client (APPENDIX 1.1) can be used as list of potential advisory team. In that list here is a sufficient number of individuals covering a key sectors (government, industry, academia, and civil society) and/or engaging in a range of big data-related activities (researching, analyzing, influencing, synthesizing, reporting, advocacy etc.). The list can be expanded and refined after the preliminary analysis.

The advisory team will be sought out to identify any actors, potential actors, activities, and organizations not already captured through the preliminary search and/or full search.

Preliminary search

A preliminary search using google.com and scholar.google.com, inputs from the client and information from a recent workshop in Brazil [1], respectively, yielded 506, 320, 18 and 53 records, respectively, for 897 records in total (Details in APPENDIX 2.1).

The 897 records include 4 Databases/Repositories, 320 Documents, 68 Events, Projects or other, 74 Individuals and 431 Organizations.

	Grand Total
Databases/Repositories	4
Documents	320
Events/Projects/Other	68
Individuals	74
Organizations	431
Grand Total	**897**

Since the research team had carried out an extensive search screening and coding at the same time, the resulting dataset is a rich one (See APPENDIX 2.3 for details. An Excel file of the results will be sent to coding and mapping group). **Therefore, the research team will screen, map and appraise the preliminary search results in APPENDIX 2.3 to obtain a preliminary list of stakeholders.** The rest of the protocol (2.4-2.7) will be followed only if the mapping reveals gaps. Special attention will be made to see if the preliminary search has captured the names of key individuals, organizations and domains named by the client. **Alternatively, targeted searches can be done to fill the identified gaps.**

Full search

Following sources are suggested. T

1. For Academic Papers/Theses/Proceedings, search the following using the search terms in APPENDIX 2.2

- Scholar.google.com
- Research repositories – IEEE Xplore, Springer, SSRN, ResearchGate, Elsevier, Wiley Online Library (see Appendix 2.2 for more)
- Academic conferences – Huawei Cloud Congress, Middle East Cloud and Big Data Conference and Exhibition, Big Data and Data Insights.

2. For Individuals/organizations/events/projects/initiatives

- Search Google.com using search terms in APPENDIX2.2
- Search non-academic conference
- Use a snowballing method from at least 10 key entries for each of the categories of Individuals/organizations/events/projects/initiatives received from the client or uncovered during the preliminary search (See APPENDIX 2.3).

Screening

Each of the records resulting from the preliminary or full search will be screened using the following inclusion/Exclusion criteria. Duplicates need to be removed making sure that all relevant information is consolidated in the remaining entry.

1	If the result is a document is it published in 2005 or after?	Yes or maybe →Continue No →Terminate
2	Does the author/document/organization/ event/project/other in the result concern Big Data	Yes or maybe →Continue No →Terminate
3	Does the author/document/organization / event/project/other is located in or concerns the use of big data in the Global South	Yes →Include at level 2[2] No →Continue
4	Does the author/document/organization / event/project/other is address through big data issues that are relevant to development in the Global South[3]	Yes or maybe →Include at Level 1 No →Continue
5	If individual, does he/she seem to have an affinity to the Global South as an expatriate or other; OR If organization, does its mission indicate an interest in working in the Global South, AND	Yes or maybe →Include at Level 1 No →Terminate
6	Would the representation by either be useful for advancing big data for development in the Global South	

Coding and Mapping

Each of the records resulting from the screening should be coded as follows

- For individuals find Organization, Type of Organization[4], Country, one or two Publications/events/project as available (in one cell but separated by semi-colons) and Background (relevant to big data) and Sources/Links
- For documents do a separate record for all relevant authors and additional information secured for them as individuals.
- For events, find the relevant participating individuals and/organizations and follow the coding required for those
- For organizations, find all relevant individuals and code information for the individuals concerned.

The resulting worksheet should have one row for each name and one column for each attribute.

Appraisal and synthesis

1. The listing will be

a. Check to see if a recoding step is needed

b. Checked against the list of key individuals and organizations provided by the client in APPENDIX 1.1

c. Checked to see whether there is at least one individual from each type of organization and each region in the Global South by doing a crosstab of the number of individuals by Type of organization and Region.

d. Checked to see if the key domains where big data is currently applied (APPENDIX 1.1) are covered in the preliminary list

2. If the result from either of the steps above is found to be wanting, Steps 2.4-2.7 will be repeated after choosing the appropriate sources and search terms

Reporting

The final listing shall be a list of names with Designation, Organization, Type of Organization, Type of Actor [5], Domain of interest [6], Region [7], Country, Gender, Email Address/or any other contact info, Selected Publications/events/ Projects (Separated by semi-colons) [8], Big Data sources used, Other information (relevant to big data), Sources/Links, Area of Focus [9] and Relevance [10] with one row for each name and one cell for each variable.

Quality assurance process

To ensure quality of review Application of the inclusion and exclusion criteria and the coding/data extraction will be conducted by pairs of RG members working independently and then comparing their decisions and coming to a consensus. Advisory group members will be consulted and involved in key activities take sector inputs.)

Timetable

Protocol to CIS	June 3th
Clarifications regarding protocol	June 4th-13th
Progress review	June 13th
Preliminary list as per 2.8	June 20th
Completion	July 5th or before

REFERENCES

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Appendix 1.1: Details of Authorship

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Domains where big data is currently used for public policy purposes

Transportation, Urban Planning, Smart Cities, Infrastructure services (Electricity, water, etc.), Public Sector Service Delivery, Health, Epidemiology, Financial Inclusion, Disaster Management, Disaster risk reduction, Official Statistics, Privacy, Marginalization, Ethics, Surveillance, Other

Appendix 1.2: Acronyms/Glossary

CIVIL SOCIETY: According to the World Bank, "Civil Society Organizations (CSOs) refer to a wide of array of organizations: community groups, non-governmental organizations (NGOs), labor unions, indigenous groups, charitable organizations, faith-based organizations, professional associations, and foundations". Other miscellaneous non-governmental and nonprofit organizations are also included under this category.

DATA PROVIDERS: those actors generating big data that have been used for analysis, ideally for development purposes. For example, Telenor Pakistan

FUNDERS: funding agencies that support big data projects, with a particular focus on development-focused big data projects. This includes the UN, World Bank and the IMF.

INTERMEDIARIES: those focused on reporting and communicating uses and implications of big data, ideally development-focused big data and those playing the role of connectors. This includes media, reporters, development agencies, thought leaders, advocacy groups etc.

SDGs (Sustainable Development Goals): 17 SDGs -no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace, justice and strong institutions and partnerships for the goals

POLICY ACTORS: those using big data insights to facilitate and implement policy decisions. It also includes those actors who are able to influence the policy environment with regards to the adoption, use and ramifications of big data, particularly development-focused big data. This includes lawyers, economists, ministry heads, regional associations and non-governmental organizations.

REGIONS

ASIA: East Asia - China, Hong Kong SAR, Japan, Korea, Dem. People's Rep., Korea, Rep., Macao SAR, Taiwan; South Asia - Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka; Southeast Asia - Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Vietnam

EUROPE, NORTH AMERICA AND CENTRAL ASIA: Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Channel Islands, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Georgia, Germany, Greece, Greenland, Hungary, Iceland, Ireland, Isle of Man, Italy, Kazakhstan, Kosovo, Kyrgyz Republic, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, FYR, Moldova, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan, Bermuda, Canada, United States

LATIN AMERICA & THE CARIBBEAN: Antigua and Barbuda, Argentina, Aruba, Bahamas, The, Barbados, Belize, Bolivia, Brazil, Cayman Islands, Chile, Colombia, Costa Rica, Cuba, Curacao, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Sint Maarten (Dutch part), St. Kitts and Nevis, St. Lucia, St. Martin (French part), St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, Uruguay, Venezuela, RB, Virgin Islands (U.S.).

MIDDLE EAST AND NORTH AFRICA: Algeria, Bahrain, Djibouti, Egypt, Arab Rep. Iran, Islamic Rep., Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, West Bank and Gaza, Yemen, Rep.

OCEANIA: American Samoa, Australia, Fiji, French Polynesia, Guam, Kiribati,Marshall Islands, Micronesia,, Fed. Sts., Mongolia, New Caledonia, New Zealand, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu

SUB-SAHARAN AFRICA: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep, Côte d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, The, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

RESEARCHERS: those actors involved in research and/or analysis of big data and/or those discussing the implications (privacy, competition, marginalization, etc.) of big data research. This includes researchers in research firms, think tanks, incubators development agencies, and universities, including university teachers.

Appendix 2.1: Preliminary 'search, screen and map' results

Search result

	Google	Google Scholar	client	Workshop	ALL
Search Date/s	NA	27/05/2016	NA	NA	NA
Search terms	NA	"Big DATA for Development"	NA	NA	NA
Time Period		2005-2016	May 2016	16,17 Nov 2015	NA
Hits	NA	340[11]	**18**	**53**	NA
YIELD	**506**	**320**	**18**	**53**	897

Screen result

	Google	Google Scholar	Client	Workshop	ALL
Databases/Repositories	4	-	-	-	4
Documents	-	320[12]	-	-	320
Events/Projects/Other	68	-	-	-	68
Individuals	21	-	18[13]	53	74
Organizations	413	-	-	-	431
TOTAL	**506**	**320**	**18**	**53**	897

Selected Databases/Repositories details [14]

Name	#Results	Name	#Results		
ieeexplore.ieee.org	25	datapopalliance.org	4	diva-portal.org	2
Springer	20	online.liebertpub.com	4	dspace.library.uu.nl	2
papers.ssrn.com	18	Taylor & Francis	4	inderscienceonline.com	2
researchgate.net	13	arxiv.org	3	ingentaconnect.com	2

books.google.com	10	oecd-ilibrary.org	3	journals.uran.ua	2
Elsevier	10	aisel.aisnet.org	2	nytsqb.caas.cn	2
Wiley Online Library	8	atlantis-press.com	2	pdfs.semanticscholar.org	2
Citeseer	6	ceur-ws.org	2	repositorio.cepal.org	2
search.proquest.com	6	chinacloud.cn	2	scholarworks.calstate.edu	2
dl.acm.org	5	data2x.org	2	tsyqb.com	2
content.iospress.com	4	degruyter.com	2		

Appendix 2.2: Search terms

This list will be refined by the LIRNEasia team while the CIS team is doing the Coding and Mapping

Search criteria[15]		**Search terms**
Population	data providers, researchers, policy actors, funders, and intermediaries in government, industry, university, and civil society in the	-
	In Countries in the Global South	List of countries in the Global South
	In regions in the Global South	Latin America, Africa, Middle East, South Asia, South East Asia and East Asia, Australia and Pacific Islands
	Or in countries in the global North but work on big data for development	Development OR Transportation, OR Urban Planning OR Smart Cities OR Infrastructure services (Electricity, water, etc.) OR Public Sector Service Delivery OR Health OR Epidemiology OR Financial Inclusion OR Disaster Management OR Disaster risk reduction OR Official Statistics OR Other
	With expertise in researching, analyzing, synthesizing, reporting, influencing, using (for decision-making) and supporting big data	Data scientist OR Other
Intervention/ Activity	Work on Big Data, Data analytics	“Big Data” OR “Data analytics”
	Provide big data	”Satellite images” OR “search query data” OR “social media data” OR “credit card data” OR “mobile data” OR “call detail records” OR CDR OR “Mobile network big data” OR “Facebook data” OR “twitter data” OR “electricity data” OR “Postal data” OR “search engine data” OR other
Outcome/ Purpose	To Support decision making in area where big data is currently applied	Policy OR security OR govern! OR surveillance OR “open data” OR “smart cit!” OR rights OR ethics OR Legal OR privacy OR marginalization OR exclusion OR discrimination OR other Advertising OR sentiment OR “personalized services” OR bank! OR loan OR cloud OR mobile OR other
	To Support decision making in SDG	Select from SDG keywords[16]
	To Support decision making in development in other topics specific to each country	???

Notes to search engine searches

- When running the search, please ensure that you use **google.com and Google Scholar** and not the local country portal such as google.in or google.lk**.**
- Please use an **incognito window** when running your searches.
- Used the advanced search settings on google.com: Specify where the keywords occur: anywhere in the article
- Use general search on Google Scholar: Excl citations and patents; time period
- Display: Use the first 100 or make determination according the relevance of the search results
- Search logs: Should contain such information as the date the search was conducted, keywords used and the cut-off criteria (i.e. first 100 results, first 200 results etc.)
- Limitations: The dynamic nature of the web limits the replicability of the search results based on each search term. Thus, the results derived from Google search run today with a given set of search terms could differ from an identical search run a few days prior.

Appendix 2.3: Sources from the Preliminary Analysis

Databases/Repositories/Search engines[17]		
1. Centres for Disease Control and Prevention- Public Health Genomics	engineeringresearchjournal.com	mobile.opendocs.ids.ac.uk
2. Datos Abiertos Del Paraguay	epd.sagepub.com	muse.jhu.edu
3. Open Data for Africa	eprints.rclis.org	ncbi.nlm.nih.gov
4. South African Data Archive	erepository.uonbi.ac.ke	nccuir.lib.nccu.edu.tw
5. Thesis abstract portals		
6. 2015.nscf.ru	escholarship.org	neurocrime.org
7. acis2015.unisa.edu.au	etc.edu.cn	nora.nerc.ac.uk
8. admin.ilinkmall.com	fatecid.com.br	nytsqb.caas.cn
9. aisel.aisnet.org	ffhoarep.fh-ooe.at	odi.org
10. ajol.info	flash.org	oecd-ilibrary.org
11. alliance4usefulevidence.org	freidok.uni-freiburg.de	oecd.org
12. archive-ouverte.unige.ch	friedensburg.at	oii.ox.ac.uk
13. arxiv.org	grupposervizioambiente.it	ojphi.org
14. atlantis-press.com	HeinOnline	online.liebertpub.com
15. baldan.me.uk	helda.helsinki.fi	openarchive.cbs.dk
16. basantathapa.de	ieeexplore.ieee.org	opendata-aha.net
17. bds.sagepub.com	igi-global.com	oro.open.ac.uk
18. bibliotecadigital.fgv.br	iimidr.ac.in	palgrave-journals.com
19. bis.org	ijaems.com	papers.ssrn.com
20. books.google.com	ijarcet.org	paris21.org
21. ccitt.northwestern.edu	ijcait.com	parkdatabase.org
22. cedric.cnam.fr	ijcsonline.com	pdfs.semanticscholar.org
23. ceur-ws.org	ijecs.in	philanthropyohio.org
24. chinacloud.cn	ijeecse.com	pietdaas.nl
25. ciitresearch.org	ijesrt.com	politesi.polimi.it
26. Citeseer	ijoc.org	portail-qualite.public.lu
27. collaboratory.de	ijoer.in	psa.ac.uk
28. computer.org	ijser.org	remote-sens-spatial-inf-sci.net
29. conference.bonfring.org	ijtre.com	repositorio.cepal.org
30. consortiacademia.org	ilo.org	repository.usfca.edu
31. content.iospress.com	inderscienceonline.com	researchgate.net
32. csa.org.cn	indjst.org	riwi.com
33. cssi.cz	ingentaconnect.com	scholarworks.calstate.edu
34. cssn.cn	injuve.es	sciedupress.com
35. curis.ku.dk	inteligenciacompetitivarev.com.br	SciELO Public Health
36. cyberleninka.ru	iopscience.iop.org	scirp.org
37. dare.ubvu.vu.nl	ir.lib.ncu.edu.tw	search.proquest.com
38. data2x.org	irbis-nbuv.gov.ua	sedici.unlp.edu.ar
39. datapopalliance.org	irbnet.de	seed.manchester.ac.uk
40. degruyter.com	is.muni.cz	semantic-web-journal.net

41. demog.berkeley.edu	iscram2015.uia.no	seminar.ilkom.unsri.ac.id
42. dev02.dbpia.co.kr	isindexing.com	senseable.mit.edu
43. developmentinformatics.org	journals.lww.com	Springer
44. dialnet.unirioja.es	journals.uran.ua	ssc.sagepub.com
45. diva-portal.org	kanarinka.com	static.newamerica.org
46. dl.acm.org	leeds.gisruk.org	statics.scnu.edu.cn
47. docs.trb.org	libraryjournal.com.cn	tandfonline.com
48. drudev.uschamberfoundation.org	lirneasia.net	Taylor & Francis
49. dspace.library.uu.nl	lril.oxfordjournals.org	thecommonsjournal.org
50. economia.ufpr.br	lup.lub.lu.se	thesis.lib.ncu.edu.tw
51. ee.co.za	managingforimpact.org	trp.org.in
52. egmontinstitute.be	martinhilbert.net	tsyqb.com
53. ehealth-syte.com	matjournals.in	udspace.udel.edu
54. Elsevier	Medknow	unbscholar.lib.unb.ca
55. emeraldinsight.com	mil.sagepub.com	unescap.org
56. vurore.nl	mincyt.gob.ar	usaidlearninglab.org
57. wandrenpd.com	weforum.org	ww.ijcer.org
58. wave-lab.org	wen.ijs.si	xdyjyj.cn
59. wbooth.mcmaster.ca	Wiley Online Library	ytlx.whrsm.ac.cn

Documents (Studies, reports, proceedings..)

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2. [BOOK] Cyberspace and International Relations	JF Kremer, B Müller - 2013 - Springer	
3. [BOOK] Digital Enlightenment Yearbook 2014: Social Networks and Social Machines, Surveillance and Empowerment	K O'Hara, MHC Nguyen, P Haynes - 2014 - books.google.com	
4. [BOOK] Diplomacy in the Digital Age	BL Hocking, J Melissen - 2015 - egmontinstitute.be	
5. [BOOK] Research and fieldwork in development	D Hammett, C Twyman, M Graham - 2014 - books.google.com	
6. [BOOK] Sensing and Shaping Emerging Conflicts:: Report of a Joint Workshop of the National Academy of Engineering and the United States Institute of Peace: ...	A Robertson, S Olson - 2013 - books.google.com	
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11. [HTML] Big Data V4 for integrating patient reported outcomes and quality-of-life indices in clinical practice	R Sarin - Journal of cancer research and therapeutics, 2014 - Medknow	
12. [HTML] Earth observation big data for climate change research	HD Guo, L Zhang, LW Zhu - Advances in Climate Change Research, 2015 - Elsevier	

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14. [HTML] Employing digital crowdsourced information resources: Managing the emerging information commons	R Mansell - International Journal of the Commons, 2013 - thecommonsjournal.org	
15. [HTML] From Big Noise to Big Data: Toward the Verification of Large Data sets for Understanding Regional Retail Flows	R Lovelace, M Birkin, P Cross... - Geographical Analysis, 2015 - Wiley Online Library	
16. [HTML] from tandfonline.com	Big data analytics: six techniques	
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22. [PDF] A Review on the Role of Big Data in Business	JR Alam, A Sajid, R Talib, M Niaz - 2014 - isindexing.com	
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70.	[PDF] From ad hoc cyber peace operations to HyperState. The outline of the future peace support.	H Kahn - neurocrime.org
71.	[PDF] from ajol.info	Use and misuse of data in advocacy, media and opinion polls in Africa: Realities, challenges and opportunities
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73.	[PDF] from ijoc.org	Big Data, Big Questions| Metaphors of Big Data
74.	[PDF] from irbnet.de	[PDF] BIG DATA AS INNOVATIVE APPROACH FOR USABILITY EVALUATIONS OF BUILDINGS
75.	[PDF] from researchgate.net	[BOOK] Handbook of Research on Security Considerations in Cloud Computing
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255. Optimized data analysis in cloud using BigData analytics techniques	S Ramamoorthy, S Rajalakshmi - ... (ICCCNT), 2013 Fourth ..., 2013 - ieeexplore.ieee.org	
256. Organization and Management of Meteorological Sensor Network Collected Big Data	D Wen, G Guo-min, W Tian-jun... - Information Technology ..., 2013 - search.proquest.com	
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258. Policy-making 2.0: Unleashing the power of big data for public governance	G Misuraca, F Mureddu, D Osimo - Open Government, 2014 - Springer	
259. Privacy in the Age of Big Data: Exploring the Role of Modern Identity Management Systems	AM Al-Khouri - World Journal of Social Science, 2013 - sciedupress.com	
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261. Public-Private Partnerships for Statistics: Lessons Learned, Future Steps	N Robin, T Klein, J Jütting - 2016 - oecd-ilibrary.org	
262. Range-Based Clustering Supporting Similarity Search in Big Data	TN Phan, M Jager, S Nadschlager... - Database and Expert ..., 2015 - ieeexplore.ieee.org	
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264. Research of Big Data Space-Time Analytics for Clouding Based Contexts-Aware IOV Applications	D Zheng, K Ben, H Yuan - Advanced Cloud and Big Data (CBD ..., 2014 - ieeexplore.ieee.org	
265. Research on influence of big data to Chinese E-govemment	Q Xu, L Yang, C Yu - Reliability Systems Engineering (ICRSE), ..., 2015 - ieeexplore.ieee.org	
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309. Tracking human migration from online attention	C Vaca-Ruiz, D Quercia, LM Aiello... - Citizen in Sensor ..., 2014 - Springer	
310. Traducción de contenidos y aplicaciones con un sistema automático integrado de postedición y mejora de la productividad	ÓS Verdiguier - Anuari de filologia. Estudis de lingüística, 2013 - dialnet.unirioja.es	
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312. Use of big data in project evaluations	NOE Olsson, H Bull-Berg - International Journal of Managing ..., 2015 - emeraldinsight.com	
313. Using Big Data to Achieve Food Security	B Evans - Big Data Challenges, 2016 - Springer	
314. Web scraping techniques to collect data on consumer electronics and airfares for Italian HICP compilation	F Polidoro, R Giannini, RL Conte... - Statistical Journal of ..., 2015 - content.iospress.com	
315. What Is the Content of the World's Technologically Mediated Information and Communication Capacity: How Much Text, Image, Audio, and Video?	M Hilbert - The Information Society, 2014 - Taylor & Francis	
316. Working with big data as indicators of socio-ecological-economic development	НБ Шаховська, ЮЯ Болюбаш - Eastern-European Journal of ..., 2013 - journals.uran.ua	
317. 새로운기술패러다임으로서빅데이터: 쟁점과과제	박진서, 박경석, 이용호 - 2013 - dev02.dbpia.co.kr	
318. 巨量資料分析應用於顧客關係管理之研究	黃盈智 - 2013 - nccuir.lib.nccu.edu.tw	
319. 支援向量機於乳癌預測之研究	SC Chin - 2015 - ir.lib.ncu.edu.tw	
320.	秦聖昌 - 2015 - thesis.lib.ncu.edu.tw	

Events/Projects/Other		
1. A Big-Data Computational Laboratory for the Optimization of Olfactory Search Algorithms in Turbulent Environments		
2.	Yosuke HASEGAWA, Lecturer, Institute of Industrial Science, The University of Tokyo and Tamer Zaki, Associate Professor, Department of Mechanical Engineering, Johns Hopkins University	
3. Air Quality Egg		
4. Big Data and Data Insights		
5. Big Data Denmark		
6. Big Data EU Project		
7. Big Data Malaysia		
8. Big Data R&D Inititaive, Department of Science and Technology		
9. Big Data Technology and National Security: Comparative International Perspectives on Strategy, Policy and Law in Australia, the United Kingdom and Canada		
10. Big Data to Knowledge BD2K, National Institutes of Health		
11. Clinton Health Access Initiative		
12. CREST, Japan Science and Technology Agency		
13. data.gov		
14. Data-Driven Critical Information Exchange in Disaster Affected Public-Private Networks		
15.	Xuan Song, Project Associate Professor, Center for Spatial Information Science, The University of Tokyo and Tao Li, Professor, School of Computer Science, Florida International University	
16. Digging into Data		
17. Disaster Preparation and Response via Big Data Analysis and Robust Networking		
18.	Yusheng Ji, Professor, Information Systems Architecture Research Division, National Institute of Informatics and Guoliang Xue, Professor, Information Systems Architecture Research Division, National Institute of Informatics	

19. Efficient and Scalable Collection, Analytics and Processing of Big Data for Disaster Applications		
20.	Takahiro HARA, Associate Professor, Graduate School of Information Science and Technology, Osaka University and Sanjay Madria, Professor, Department of Computer Science, Missouri University of Science and Technology	
21. European Statistical System BigD Project		
22. Frankfurt Big Data Lab	http://www.bigdata.uni-frankfurt.de/data-refugees-project/	
23. FRED Epidemic Simulator		
24. GapMinder		
25. German Red Cross and Red Cross Red Crescent Climate Centre		
26. Global Partnership for Sustainable Development Data		
27. Huawei Cloud Congress		
28. Human-Centered Situation Awareness Platform for Disaster Response and Recovery		
29.	Asanobu KITAMOTO, Associate Professor, Digital Content and Media Sciences Research Division, National Institute of Informatics and Cyrus SHAHABI, Director, Integrated Media Systems Center, University of Southern California	
30. Indo-Dutch Joint Research Programme for ICT		
31. Innoplan		
32. Intel Science and Technology Center for Big Data		
33. International Conference on Big Data for Official Statistics		
34. Inter-University Institute for Data Intensive Austronomy		
35. IPCEI HPC BDA		
36. Law and Policy for Big Data Analysis		
37. LeanBigData		
38. LIRNEasia		
39. Madingley model		
40. Mammoth BI		
41. Microsoft Research-Climate Data Initiative		
42. Middle East Cloud and Big Data Conference and Exhibition		
43. Myanmar Big Data Initiative		

44. NRP75	Christian S. Jensen	
45. NYU School of Medicine	NYU medical students Brian Chao, Michael Lui, Hye Min Choi, and Varun Vijay take the team approach to learning about the anatomy of cells, and how disease can disrupt them. Analyzing big data sets is now a routine part of their studies, too.	
46. Open Data for Resiliance Initiative		
47. Open Nepal		
48. Plants Employed as Sensing Devices	Andrea Vitaletti	
49. RTI International and IBM Research – Africa		
50. sd-kama Smart Data for Disaster Management		
51. Smart Data for Mobility		
52. Smart Energy Hub		
53. SmartRegio		
54. Supercomputing and big data	Dr. Thomas Lippert	
55. Telenor Research		
	Telenor Research, in cooperation with the Harvard T.H. Chan School of Public Health, Oxford University, the U.S. Center for Disease Control, and the University of Peshawar have recently published a study demonstrating the power of Big Data to anticipate and track the spread of dengue fever, the most rapidly-spreading mosquito-borne viral disease in the world.	
56. The Billion Prices Project		
57. The Nature Conservancy		
58. The Palenque Project		
59. TSSG and NTT Data		
60. United Nations Population Fund Big-Data Boot Camp		
61. University of Maryland & Google		
62. Individuals		
63. Adam Dady	Adam Dady	British Embassy Brasilia
64. Alessandro Molon	Alessandro Molon	n/a
65. Alex 'Sandy' Pentland		
66. Alexamdrine Pirlot de Corbion	Alexamdrine Pirlot de Corbion	Privacy International
67. Amanda Soares Kemmer	Amanda Soares Kemmer	n.a

68. Amar Ashar	Amar Ashar	Berkman Center
69. Amelia Showalter		
70. Ana Julia Fernandes	Ana Julia Fernandes	British Embassy Brasilia
71. Argyri Karanasiou	Argyri Karanasiou	(affiliated with) Center for Intellectual Property, Policy & Management (CIPPM) and with the Data Science Institute at Bournemouth University
72. Bernard Sabiti	Bernard Sabiti	n/a
73. Bertrand Chen, Asia Miles		
74. Bill Adams and Yannis Paschalidis		
75. Bill Schmarzo		
76. Carlos Affonso Souza	Carlos Affonso Souza	Institute for Technology and Society
77. Carly Nyst	Carly Nyst	n/a
78. Carolina Botero Cabrera	Carolina Botero Cabrera	Karisma Foundation
79. Chris Yiu		
80. Christian Perrone	Christian Perrone	Secretariat of the Inter-American Juridicial Committee of the Organization of American States
81. Christina Gonzalez	Christina Gonzalez	University of Sao Paulo
82. Constance Choi	Constance Choi	Seven Advisory Co-Founder
83. Daniela Bezerra de Silva	Daniela Bezerra de Silva	Open Society Information Program
84. Danilo Doneda	Danilo Doneda	State University of Rio de Janeiro
85. David P. Stewart	David P. Stewart	Inter-American Juridicial Committee
86. Dr. Holger Kisker		
87. Edward L. Glaeser, Fred and Eleanor Glimp -Harvard Kennedy School		
88. Emma Uprichard (University of Warwick)		
89. Emmanuel Letouzé (Data Pop Alliance)		
90. Eric Sears	Eric Sears	MacArthur Foundation
91. Fabrizio Scrollini	Fabrizio Scrollini	DATA
92. Fabro Steibel	Fabro Steibel	ITS
93. Fernando Perini	Fernando Perini	International Development Research Centre
94. Gemma Galdon Clavell	Gemma Galdon Clavell	
95. Geng Lin		
96. George Roumeliotis		
97. Giancarlo C.		
98. Graciela Selaimen	Graciela Selaimen	Ford Foundation
99. Gregory Ryan	Gregory Ryan	Konrad Adenauer Stifitung Foundation in Brazil
100. Hannah Draper	Hannah Draper	Open Society Information Program
101. Javier Pallero	Javier Pallero	Access

102.	Jérémie Gallien	Analysed health data to tackle HIV Aids transmission from mother to child in Mozambique	
103.	Joana Varon	Joana Varon	n/a
104.	Joe Cannataci	Joe Cannataci	n/a
105.	Juan Carlos Lara	Juan Carlos Lara	University of Chile
106.	Leandro Ucciferri	Leandro Ucciferri	Association of Civil Rights
107.	Lillian Nalwoga	Lillian Nalwoga	Internet Society_ Uganda Chapter
108.	Lina Dencik	Lina Dencik	Cardiff University
109.	Liudmyla Romanoff	Liudmyla Romanoff	United Nations Secretary-Generals's intitiative on big data
110.	Lucio R. Renno	Lucio R. Renno	University of Brasilia
111.	Marcel Leonardi	Marcel Leonardi	FGV Direito SP
112.	Mariana Chrisostomo de Almeida	Mariana Chrisostomo de Almeida	British Embassy Brasilia
113.	Marianne Franklin	Marianne Franklin	Goldsmith, University of London
114.	Mario Viola	Mario Viola	Instituto Brasileiro de Mercado de Capitais
115.	Nate Silver		
116.	Niels ten Oever	Niels ten Oever	Article 19
117.	Patricia Cornils	Patricia Cornils	n/a
118.	Patrick Ball		
119.	Patrick Meier		
120.	Pranesh Prakash	Pranesh Prakash	CIS
121.	Primavera de Filippi	Primavera de Filippi	National Center for Scientific Research
122.	prof.dr.ir. JL (Jan) Top- DLO Onderzoeker		
123.	Queen's University- David Maslove		
124.	Queen's University- Richard Birtwhistle		
125.	Rohan Ainsley Samarajiva	Rohan Ainsley Samarajiva	LIRNEasia
126.	Ronaldo Lemos	Ronaldo Lemos	State University of Rio de Janeiro
127.	Samantha Ribeiro	Samantha Ribeiro	Pontifical Catholic University of Rio de Janeiro
128.	Sean Martin McDonald	Sean Martin McDonald	Frontline
129.	Sergio Branco	Sergio Branco	Fundacao Getulio Vargas Law School
130.	Sophie Stalla-Bourdillon	Sophie Stalla-Bourdillon	University of Southampton
131.	Stefanie Felsberger	Stefanie Felsberger	American University in Cairo
132.	Sunil Abraham	Sunil Abraham	Center for Internet and Society
133.	Vipul Kharbanda	Vipul Kharbanda	Center for Internet and Society
134.	Vladimir Chorny	Vladimir Chorny	Red en defense de los derechos digitales (R3D) in Mexico.

135. Xianhong Hu	Xianhong Hu	Division of Freedom of Expression and Media Development
136. Yi Chen		
137. Organizations		
138. 23andme	Anne Wojcicki	
139. 451 degrees		
140. Accern		
141. Actuate		
142. Acxiom		
143. Administrative Data Research Network		
144. African Development Bank		
145. Agri All Africa		
146. AIcure		
147. Algeria Data Portal		
148. Algomost	Michael Leviev	
149. Amara Health Analytics		
150. Angola Data Portal		
151. ApigeeInsights		
152. Arabia Business Intelligence and Analytics		
153. Arcplan		
154. Asoko		
155. AT&T Researcher		
156. Atom		
157. Atomwise		
158. Avanade		
159. aWhere		
160. Ayasdi		
161. Baidu Big Data Lab		
162. Basis Technology		
163. Berlin Big Data Centre		
164. Big Data		
165. Big Data and Network Engineering Research Center		
166. Big Data and Urban Planning, Shenzhen University		
167. Big Data at Department of Computer Science and Engineering in The Hong Kong University of Science and Technology		
168. Big Data Engineering Laboratory, Osaka University		
169. Big Data Engineering Technology Research Center, Shanghai Jiao Tong University		
170. Big data for discovery science		
171. Big Data for Humans	Peter Ellen	
172. Big Data for Social Science		
173. Big Data forAfrica		
174. Big Data Genomics		
175. Big Data Initiative @ CSA (Computer Science and Automation) at the Indian Institute of Science (IISc)		
176. Big Data Initiative at CSAIL, MIT		
177. Big Data Initiative, Seoul University		
178. Big Data Institute, Fox School of Business		

179. Big Data Research and Education, University of Washington		
180. Big Data Research, Accenture		
181. Big Data Senior Steering Group (BDSSG)		
182. Big Data Strategy Centre		
183. Big Data Value Association		
184. Big Data-Scientist Training Enhancement Program (BD-STEP)		
185. BigDataCorp	Thoran Rodrigues	
186. Bigobject		
187. Bigquery		
188. Bigstep		
189. BIME		
190. Blazegraph		
191. BMC		
192. Bond University- Centre for Actuarial and Financial Big Data Analytics		
193. Boston University Research		
194. Braintribe		
195. Broadreach Healthcare		
196. Brussel Rural Development Findings		
197. Cambridge Big Data Strategic Research Initiative, University of Cambridge		
198. Capgemini		
199. Carbon Analytics		
200. Catalyst		
201. CBB Capbiotek		

202. Center for Big Data Ethics, Law, and Policy at Data Science Institute, University of Virginia		
203. Center for Big Data in Translational Genomics		
204. Center for Large Data Research and Data Sharing in Rehabilitation		
205. Center for the Study of Data and Knowledge (CSDK) at Data Science Institute, University of Virginia		
206. Centre for Big Data Analytics		
207. Centre for Data Innovation	Daniel Castro	
208. Centre for High Performance Computing		
209. Centre for Human Rights Science		
210. Centre for Scientific and Industrial Research		
211. Cignifi		
212. Cisco ParStream		
213. Citrine Informatics	Erin Antonio, Christina Hartman	
214. CleverDATA		
215. Climate Corporation		
216. Climformatics		
217. Cloudera		
218. Clover ETL		
219. Cochrane		
220. Collective Intelligence Agriculture	Hafiz Kalamulla	

221. Columbia University and Mailman School of Public Health		
222. Comiit		
223. Commvault		
224. Competence Centre for Scalable Data Services and Solutions Dresden/Leipzig		
225. Complexity Science Hub		
226. Computational Social Sciences Laboratroy		
227. Computer Society of Iran		
228. Continuum Analytics		
229. Copenhagen Solutions Lab		
230. Couchbase		
231. Council for Big Data, Ethics and Society		
232. Counsyl		
233. Crate		
234. Crayon Data		
235. CrimsonHexagon		
236. CROC	Alexander Khludenev	
237. CropClimate.org		
238. CSC		
239. Custora		
240. Dassault Systemes		
241. Data & Society		
242. Data Centric Alliance		
243. Data Elite Ventures		
244. Data for Policy		

245. Data Mining and Big Data Analytics TC,IEEE	The goals of the DMTC are to: (1) promote the research, development, education and understanding the principles and applications of data mining and big data analytics and (2) to help researchers whose background is primarily in computational intelligence in increasing their contributions to this area.	
246. Data Research Centre for Smart Analytics, University of Essex		
247. Data Science and Analytics Laboratory University of Washington	Joshua Blumenstock, PhD	University of Washington
248. Data Science for Social Good		
249. Data Science Institute, Imperial College, London		
250. Data Science Institute, University of Virginia		
251. Data to Decisions Cooperative Research Centre		
252. Datacom		
253. Dataiku		
254. Datamine		
255. datamining labs (dmlabs)	Alex Natekin	
256. Datanami		
257. Data-Pop Alliance		

258. Data-Pop Alliance- Big Data for Climate Change Resilience		
259. Dataproces	Morten Lindblad	
260. Datastorm		
261. DBPedia		
262. deCODE Genetics		
263. Decoded		
264. Deloitte		
265. Department for International Development		
266. Department of Civil, Environmental & Geomatic Engineering University College London	Tao Cheng, PhD	University College London
267. Department of Health and Human Services		
268. Derochos Digitales		
269. DHIS 2		
270. Ditial Humanitarian Response		
271. DynamoDB		
272. Economic and Research Council		
273. Elastic		
274. Elsevier Health Analytics		
275. EMC		
276. Enigma		
277. Enterprise Data Analytics Lab		
278. EPAM healthcare big data accelerator		
279. Epsilon		
280. Ericsson Expert Analytics		
281. ESI, Oued Smar		

282. ESRC Business and Local Government Data Research Centre		
283. Ethics of Big Data Research roup (CENTRE FOR RESEARCH IN THE ARTS, SOCIAL SCIENCES AND HUMANITIES)		
284. Etiya		
285. European Centre for Nuclear Research CERN		
286. Expedia		
287. Experian		
288. e-Zest		
289. Featurespace	Dave Excell, Daniel Gonzalez-Ordonez, Tom Whitehead	
290. FIndwise		
291. Flatiron		
292. FlexEdge		
293. flocktory.com	Dmitry Lushnikov	
294. Flowminder		
295. Flowminder.org	Linus Bengtsson, MD, PhD	Flowminder.org
296. Flutura		
297. Flytxt		
298. Focusmatic		
299. Food Security Portal		
300. Forrester Research		
301. Fraunhofer IAIS		
302. Fujitsu		
303. Fusionex		
304. Future of Privacy Forum		
305. Gaavagai AB		
306. Gartner		

307. Global Big Data Technologies Centre		
308. Global Forest Watch		
309. Global Open Data for Agriculture and Nutrition		
310. Global Research Center for Big Data Mathematics, National Institute of Informatics in Japan		
311. Globus		
312. GoDataDriven		
313. Google Earthengine		
314. Gramener		
315. Grandata		
316. Gro Intelligence	Sara Menker	
317. HealthMap		
318. Hewlett Packard Enterprise		
319. Hewlett Packers Enterprises		
320. HItachi America Ltd.-Big Data Lab		
321. Hootsuite		
322. Huawei Noah's Ark Lab		
323. Human API		
324. Human Heredity and Health in Africa		
325. Human Rights Data Analysis Group		
326. IBM (Cognos/ InfoSphere)		
327. IBM Analytics		
328. IBM Corporate Service Corps		
329. IBM Netezza		
330. IBM THINKLab		

331. IBM Watson Health		
332. IDC Big Data Research		
333. Inasafe		
334. Incubio	Andres Manso	
335. Indico		
336. Infochimps		
337. Infocomm Development Authority of Singapore	Prabir Sen, PhD	Infocomm Development Authority of Singapore
338. Infor SkyVaullt		
339. Informatica		
340. Information Builders		
341. Information Initiative at Duke University		
342. INRIX		
343. Insight Centre for Data Analytics		
344. Institute for Big Data Analytics		
345. Institute for Policy Research-Northwestern University		
346. Institute of Biomedical Informatics, University of Pennsylvania		
347. International Food Policy Research Institute		
348. Janssen Research and Development		
349. Japan Science and Technology Agency		
350. Jawbone		
351. Jethro		
352. Kaggle		
353. Kanda Software		

354. Karabina		
355. Keio University, International Centre for Internet and Society		
356. Kenyan National Bureau of Statistics		
357. Knewton		
358. Know Center		
359. Knowledgent		
360. Kofax		
361. Koordinates		
362. Krux		
363. Kyruus		
364. Leeds Institute for Data Analytics, University of Leeds		
365. Leiden University Peace Informatics Lab		
366. Lenovo Big Data Lab		
367. Lightning Lab		
368. Lincube		
369. LineMetrics		
370. LIRNEasia		
371. Los Alamos National Laboratory Biosurveillance Gateway		
372. Lyme Research Alliance		
373. Machinalis		
374. Madiva		
375. Mailchimp		
376. Malaysia SIG on Big Data		
377. MapR		
378. Mapunity, India	Ashwin Mahesh, PhD	Mapunity, India
379. Mellanox Technologies		
380. Metabiota		
381. MicroMappers		
382. Microsoft Research		
383. MIcroStrategy		
384. MindBreeze		
385. MIT CSAIL Big Data		
386. Mobilize		
387. MongoDB		
388. My Smart Farm	Wolfgang von Loeper - Founder	
389. MySmartFarm		
390. National Big Data Research and Development Initiative, National Science Foundation		
391. National Ecological Observatory Network		
392. National Institute of Economic and Social Research		
393. National Institutte of Health		
394. National Oceanic and Atmospheric Administration		
395. National Radio Astronomy Observatory		
396. Navegg	Pedro Cruz, Luciano Juvinski, Adriano Brandao	
397. NECTEC, Thailand	Wasan Pattara-atikom, PhD	NECTEC, Thailand
398. NEDBANK		
399. Neo Technology/neo4j		
400. NERC-Environment Big Data Capital		
401. Net Hope		

402. NetApp		
403. Nextbigsound		
404. Ninja Metrics		
405. NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGYFaculty of Information Technology, Mathematics and Electrical Engineering		
406. Office of National Statistics		
407. Office of Science and Technology		
408. Open Data Kit		
409. Open Evidence	Francesco Mureddu	
410. Open Society Foundations		
411. Openlink		
412. OpenText		
413. Opiner	Ilya Chetverkin	
414. Opower		
415. Oracle Big Data		
416. Orange		
417. Orion Health		
418. Oxfam		
419. Oxford e-Research Centre		
420. Oxford Internet Insititute		
421. Palantir		
422. Pan African Farmer's Organisation		
423. Panjiva		
424. Pentaho		
425. PitneyBowes		

426. Pivotal		
427. Placeiq		
428. POS Maldives		
429. Precifica	Walter Sabini Jr, Ricardo Ramos	
430. Premise		
431. PriceStats		
432. Privacy International		
433. PromptCloud		
434. Pulse Group PLC		
435. Qatar Computing Research Institute		
436. Qlik		
437. Qrious		
438. Quarterly Census of Employment and Wages		
439. QuBeQu		
440. Quizlyse		
441. RAND Europe Research		
442. Recorded Future		
443. Research Councils UK		

444. Research Institute of Big Data Analytics (RIBDA) at Xi'an Jiaotong-Liverpool University (XJTLU)	The Research Institute of Big Data Analytics (RIBDA) at Xi'an Jiaotong-Liverpool University (XJTLU) is collaboration between IBM China, and Suzhou International Science-Park Data Center (SISDC) representing of Suzhou Industrial Park Administrative Committee (SIPAC) to support the strategic economic focus on business analytics.	
445. Responsible Data Forum		
446. Retailrocket	Roman Zykov	
447. Revolution Analytics (Microsoft Subsidiary)		
448. Robert H. Smith School of Business	Louiqa Raschid, PhD	Robert H. Smith School of Business
449. Rocketsoftware		
450. RODOS transport systems development centre		
451. Royal Statistical Society	Hetan Shah	Royal Statistical Society
452. Ryerson University		
453. Saama		
454. Sandvik		
455. SAP: North America/ SAP Global		
456. SAS		
457. School of Computer Science & Informatics, Cardiff University (Peter Burnap and Mathew Williams)		
458. School of Information Studies University of Maryland	Vanessa Frias-Martinez, PhD	University of Maryland
459. SecDev		
460. Segmento	Eugene Easy	
461. Semsoft		
462. SentiMetrix		
463. Seven Bridges Genomics		
464. SIDA		
465. Simplectix		
466. Sisu labs		
467. Skopery		
468. Skyhook		
469. Snowflake		
470. SoBigData		
471. Social big data ICT Collaborative Research Center at Institute of Industrial Science, University of Tokyo	Yoichi Sato, Masaru Kitsuregawa, Kanta Matsuura, Masashi Toyoda	
472. Social Data and Science Lab		
473. Socrata		
474. Softwareag		
475. Sonamine		
476. South Africa National Research Network		
477. Splunk		
478. Spotify		
479. Square Kilometer Array		

480. Stanford School of Earth, Energy and Environmental Sciences		
481. "Stanley Ho Big Data Decision Analytics Research Centre		
482. The Chinese University of Hong Kong"		
483. Stanley Ho Big Data Decision Analytics Research Centre, The Chinese University of Hong Kong		
484. Statistics Withtout Borders		
485. Swedish ICT/SICS		
486. SyncSort		
487. Talend Expert		
488. Tamr		
489. Te Punaha Matatini		
490. Technical Centre for Agricultural and Rural Cooperation		
491. Technion Isreal Institute of Technology		
492. Technoserve		
493. Telefonica		
494. Tennessee technological university -College of Enineering		
495. Teraco Data Environments		
496. Teradata		
497. Terra Bella		
498. Terracotta		
499. The Chorus Project		
500. The Data Incubator		

501. The Interdisciplinary Center for Network Science & Applications (iCeNSA) University of Notre Dame	Nitesh Chawla, PhD	University of Notre Dame
502. The Johannes Kepler University		
503. The Nature Conservancy Society		
504. The Okawa Foundation for Information and Telecommunications		
505. The Unbelievable Machine Company		
506. The University of California		
507. Theta		
508. ThinkBig Analytics		
509. Tracx		
510. Transportation Policy Research Centre		
511. Treparel	Jeroen Kleinhoven	
512. UCL Big Data Institute		
513. UN Global Pulse		
514. UN Global Working Group on Big Data for Official Statistcis		
515. United Nations Global Pulse		
516. Unitedhealth Group		
517. University of Amsterdam	Linnet Taylor, PhD	University of Amsterdam
518. University of Cambridge	Eiko Yoneki, PhD	University of Cambridge
519. University of Colombo-School of Computing	Ruvan Weerasinghe, PhD	University of Colombo - School of Computing, Sri Lanka

520. University of Moratuwa	Amal Shehan Perera, PhD	University of Moratuwa
521. University of Moratuwa, Sri Lanka	Amal Kumarage, PhD	University of Moratuwa, Sri Lanka
	P.K.S. Mahanama, PhD	University of Moratuwa, Sri Lanka
522. University of New South Wales-Centre for Big Data Research in Health		
523. University of Queensland- National Health and Medical Research Council Program Grant		
524. University of Tokyo	Ryosuke Shibasaki, PhD	University of Tokyo
525. University of Wageningen		
526. Urban Big Data Centre		
527. UrbanSim	Paul Waddell	
528. URX		
529. Usalytics	Igor Balk	
530. UTM Big Data Centre		
531. Vanderbilt University Medical Center		
532. Visalyze	Christoph Holz	
533. VitalSigns	Sandy Andelman	
534. VMWare		
535. Volvo	Dr. Magnus Kuschel	
536. Voolgo		
537. Wageningen UR		
538. Watson Discovery Advisor by IBM		
539. Waze		
540. Weathersafe		
541. Weblyzard		
542. Westpac Affinity ID		
543. Wide eyes technologies		
544. Wikibon		
545. World Bank		
546. WSO2, Sri Lanka	Srinath Perera, PhD	WSO2, Sri Lanka
547. Xerox Research Centre		
548. YouScan		
549. YueDiligence		
550. Zeedsecurity		
551. Zephyrhealth		
552. Zeppelin		
553. Zymergen		

ENDNOTES

1. Big Data in the Global South, International Workshop, Rio de Janeiro, Brazil, November 2015
2. Level 0= Not relevant; Level 1 = Somewhat relevant; Level 2 = Relevant
3. E.g. peacekeeping, disaster management, urban planning, transportation management, desertification, mobility, pollution, carbon footprint and other
4. Government, Industry, University and Civil society (Think tanks, Advocacy Groups, Intermediary & Other)
5. Researcher, Policy Actor, Data Provider, Funder, Intermediary or Other (See APPENDIX 1.2 for details)
6. See APPENDIX 1.1 for a suggested set of domains; Add new domains, as necessary.
7. Europe and Central Asia, Latin America & the Caribbean, Middle East and North Africa, North America, East Asia and Pacific, South Asia, Southeast Asia, Sub-Saharan Africa
8. Sufficient information to judge the relevance of the person as a 'Big data for Development' stakeholder
9. Big Data, Big Data for Development
10. 0 = Not relevant; 1 = Somewhat relevant, 2 = relevant; 3 = highly relevant APPENDIX 1.1: Details of Authorship
11. Although ~340 results were generated, there were some errors that led to only 320 results being captured
12. Additional databases, Events/Projects/Other, Individuals and Organizations can be uncovered during the mapping stage from 320 document.
13. Additional organizations can be extracted during the mapping stage from this 53 individuals listted here
14. There are 168 repositories APPENDIX 2.3. Included here are repositories that yielded at least two results.
15. From the search question "Who are the data providers, researchers, policy actors, funders, and intermediaries in government, industry, university, and civil society involved in [providing] researching, analyzing, synthesizing, reporting, influencing, using (for decision-making) and supporting big data in the Global South and big data for development in the Global North, with development referring to activities and outputs of a public interest/ purpose nature and the actors identified in terms of their gender, country/ region of focus and area of expertise?"
16. "Sustainable development goals" OR SDG OR develop! OR Poverty OR socioeconomic OR income OR poor OR Nutri! OR food OR hunger OR agriculture OR forest! OR fish! OR farm! OR Health! OR disease OR abuse OR mortality OR epidemic! OR vaccine OR medicine OR Education OR enroll! OR literacy OR numeracy OR disab! OR Equality OR woman OR women OR employ! OR traffick! OR violence OR reproduc! OR empower! OR Water OR sanitation OR hydropower OR pollution OR ecosystem OR Energy OR electricity OR power OR "carbon footprint" OR "fossil fuel" OR "economic growth" OR GDP OR "Gross domestic product" OR unemploy! OR employ! OR "Gross National Income" OR socioeconomic OR Transport OR irrigation OR "information and communication technology" OR ICT OR industry OR financial OR credit OR Social OR environment! OR discriminat! OR migrat! OR mobility OR Hous! OR "urban planning" or traffic OR slums OR transport OR city OR Green OR waste OR "land degradation" OR recycle! OR Climate OR weather OR disaster OR temperature OR "seal level" OR hazards OR Ocean OR marine OR coastal OR Desertification OR extinct! OR crop OR terrestrial OR deforestation OR Inclusi! OR corrupt! OR governance OR Internet OR online OR "social Media" OR mobile OR digital OR trade
17. All except the first four entries are from the URLs of the 320 documents found in the Google Scholar search. Only a few may be directly relevant to big data research per se.